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ABSTRACT

The College Scholarship Service guide to implementing financial aid data processing systems is presented, based on conferences that promoted information exchange between data processing and financial aid administrators. The following topics are addressed: long-range planning, the rationale and organizational basis for financial aid, specific financial aid programs, functions of a system and system modules, relationships between the aid office and other offices on the campus that are important in the development of financial aid office data processing systems, and converting from a paper operation. The functions of a financial aid office can be grouped into six modules that are duplicated in most offices whether they use a manual or an automated system: application tracking, a need analysis, packaging, award notification, disbursement and fiscal management, and research and reporting. Four essential characteristics for an automated financial aid system are comprehensive data files, multiyear operations, flexibility, documentation. Decisions must be made regarding the following: mini versus maxi, online versus batch, and package versus in-house development. Additionally, guidelines for developing a financial aid data processing system are presented. Interfaces between the aid office and the admissions, registrar's, business, and other offices are addressed, and the following financial aid programs are examined: Basic Educational Opportunity Grants, Supplemental Educational Opportunity Grants, National Direct Student Loans, College Work-Study, Federally Insured/Guaranteed Student Loans, other federal programs, state scholarship and grant programs, and institutional private aid programs. (SW)

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The CSS Guide to Implementing Financial Aid Data Processing Systems

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The College Board is a nonprofit membership organization that provides tests and other educational services for students, schools, and colleges. The membership is composed of more than 2,500 colleges, schools, school systems, and education associations.

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Preface

In 1975 the College Scholarship Service (CSS) of the College Board sponsored its first Conference on Data Processing in Financial Aid. At the Asilomar conference grounds in Pacific Grove, California, financial aid administrators and data processing personnel from 15 postsecondary institutions focused on the exchange of information about problems and their solutions in implementing financial aid data processing systems. The participants encouraged the CSS to continue to provide opportunities for financial aid administrators to learn more about data processing and for data processing personnel to learn more about financial aid. Neither group expected to become expert in the area of specialization of the other. Rather, a mechanism was sought whereby each group could gain the exposure and experience to assume an active role in the development and implementation of systems that would operate to their mutual benefit.

The College Scholarship Service responded to those needs by repeating the Asilomar conferences in succeeding years and, in 1978, by expanding the conference to include an Eastern section, held at Williamsburg, Virginia. In addition to spreading geographically, the conferences have broadened in purpose: The first conferences were limited to forums for data processing users; the recent conferences have offered teaching activities as well as forums. The instruction provides exposure to advanced systems for those who wish to upgrade their present capabilities, and exposure to the basics of financial aid data processing systems for those who wish to begin the use of computers in aid administration. These conferences, reflecting the ongoing concerns of the CSS to improve aid administration at postsecondary institutions, provide a valuable learning experience for both new and experienced aid administrators and data processing personnel.

Because many interested institutional representatives have found it impossible to attend the Asilomar and Williamsburg conferences, this publication attempts to replicate some of the conference presentations for home study. It is not intended to be everything you always wanted to know about financial aid or data processing but were afraid to ask; for that kind of information administrators should turn to the references described at the end of this publication. Another possibility is to spend a few days in the office of an administrator who has used the data processing system. Observing and experiencing the other person's job, as well as participating in a more extensive, formal educational experience than either the Asilomar and Williamsburg conferences or this publication can provide, are recommended.

It is hoped that this booklet will provide a basic core of knowledge and information with which aid and data processing administrators can understand the workings of each other's system and thus communicate with fewer misunderstandings. The booklet's organization reflects an integrated approach to systems development. The rationale and organizational basis for financial aid are discussed first. Later chapters focus on the ways in which a typical system might function. The aid administrator, however, should be particularly concerned with the chapters on planning and conversion from a paper operation; the data processing administrator will concentrate on the background of financial aid and the functions a typical system might perform.

The authors of this publication and the contributors have all been involved in the previous CSS data processing conferences. The text is derived from the questions asked by, and the answers provided to, the financial aid and data processing personnel who attended those conferences.

1. Planning

Data processing systems for financial aid administration are not a new commodity. The first CSS-developed system was made available to institutions in 1967, and many institutionally developed systems predate that effort. In recent years, however, both the importance of and the interest in such systems have expanded greatly. This interest is reflected by aid administrators, data processing personnel, and senior institutional administrators.

Several factors contribute to this development. One is that on many campuses financial aid is finally at the top of the list, and systems development in student aid administration is receiving attention from the data processing personnel. After systems for the business office, registrars, admissions, and other student services have been established, financial aid is the logical and probably necessary next step.

Another factor is the change in computer mainframe capabilities. At many campuses larger and more sophisticated equipment has become available, which permits additional user systems. At other campuses the advent of minicomputers has facilitated the development of smaller, more specialized systems than were previously possible.

An important factor, too, is the growth in volume and complexity of the aid process and the increasing demands for more accountability in fund administration. Data processing has been seen as a panacea for almost any problem in the operation of the aid office. Horror stories about other institutions that did not provide sufficient management and administrative resources to the aid operation and were required to repay monies to the funding agency because of misfeasance or malfeasance probably accelerated the determination of senior administrators, both in and above the aid office, to seek that promised panacea.

Although these activities do bring to financial aid the personnel, financial, and technical resources necessary to the development and implementation of data processing systems, they confuse the real reasons for which such systems are wanted and needed. For an institution contemplating the introduction of automation into its financial aid office, it is crucial that long-range planning receive the highest priority. User time and data processing resources are far too valuable to squander in unstructured development that often results in considerable backtracking, duplication of effort, and maladministration. Regardless of the sophistication of a system, an ill-defined problem or requirement statement practically guarantees failure.

Management of Systems Development

The responsibility for managing the systems development process rests with the users and the top managers of the institution. It is the senior administration's responsibility to create a framework within which the institution's other managers can operate to define and implement systems. It is the user's role to define requirements succinctly, to anticipate future needs the system might meet, to indicate the advantages and improvements expected from the system, and to review and monitor the progress of the system's development. Included in this monitoring responsibility is a frequent assessment of proposed system features to assure that they will meet the user's stated requirements.

This role for the nontechnical managers and users cannot dictate the systems design or approach to be used by the data processing administrators any more than they can specify the programming language to be used. But the aid administrators do have a responsibility to say if and when a proposed module, activity, or approach complements or hinders the primary function of the system, which is to aid students. Too many aid administrators have abdicated this responsibility during the design phase and have been presented with a system technically precise and processing-efficient, which simply will not deliver aid to students in the correct way.

Conversely, the aid administrators should not attempt to specify what systems will be used to solve their problems. The aid administrators should avoid saying, "We need an on-line system" (even when they really understand what that means). Rather, the aid administrators should clearly state the problem to be solved: "We need a mechanism to adjust the centrally produced need analysis when more current or changed information is provided. At peak periods around registration we process an average of 50 such cases a day. At other times during the year we may process an average of 20 cases a week." The process of identifying alternative solutions is then left to the data processing staff.

Long-Range Planning

The first tendency of the aid administrator who will use the system is to avoid "wasting time" in planning when there is the immediate press to get the job done. The planning process, however, is an essential communications device to assure that the user's requirements are understood by the systems staff. Because the automation of financial aid is often part of an integrated student information project, the need for long-range planning and cross-function coordination is critical to the project's success.

Today's technology allows for easy exchange of information across the functional lines of the organization. Often the technology makes it possible for a single system to have many different users. Unfortunately, with several users the control of the system is diffused while the technical staff is centralized. This often results in de facto control of the system by the technical staff. Long-range planning can facilitate multiple-user system development while avoiding too-extensive control of the system by the technical staff. Planning assists the user in assuring proper control over systems development. A long-range plan allows the user to:

1. *Initiate and direct systems development.* Users may provide general specifications before the systems architecture is specified and systems are prematurely limited to existing institutional technology, or new technology is limited to the requirements and demands of existing systems. Technical decisions should be made in response to user requirements; user requirements should not dictate technical decisions.

2. *Define the scope of systems development.* The areas that should be included in an integrated student information project can be examined during the planning process. If the scope of the total project is defined early, greater potential for timely development and identification of all potential users and uses is assured.

3. *Rank projects.* Because a long-range plan identifies in general the projects to be completed by the technical staff and the order in which they are to be executed, the user can assist in establishing the priorities of different activities. As new demands arise, they can be considered in the context of an overall plan and priorities adjusted to the needs of all users. Unless priorities are set by the user, the systems staff is placed in an inappropriate role.

4. *Direct the use of developmental resources.* Despite the current interest in financial aid systems, developmental resources are limited. Although it may be more interesting and technically easier to develop one module, the competition for limited resources may direct that another be given priority.

5. *Ensure that functional policies and plans are well formulated.* Unfortunately, users often expect new systems to correct problems that may be functional and organizational. The development of a plan forces the user to consider carefully the objectives and the goals of the functional area. The user must anticipate many questions of "why" from the technical staff. Responses of "because" may be easy, but they are not functional. The aid administrators must expect changes in their activities as well as in the data processing system.

6. *Affix responsibilities.* Perhaps the most important function of a long-range plan is to state user and system designer responsibilities clearly. The plan outlines the expected products, the timetables, and the responsibilities of one staff in relation to another's. It is, in fact, the contract between user and system designer. The planning document should also assign responsibilities for alterations and maintenance of the system to ensure that the user is not delivered of a system and then abandoned by the systems staff.

Planning is difficult, and various factors may impede its progress. Long-range planning, especially, is one of the more sophisticated institutional management tasks. The institution must have a clear delegation of responsibilities for the planning process itself. Someone must have the responsibility for defining institutional goals and objectives, for setting overall institutional schedules, and for assuring that all parties to the planning process achieve those goals and objectives while adhering to those schedules. Without this institutional attention the efforts of the aid and data processing staffs will be of limited effectiveness.

Another problem is that the systems plan is sometimes viewed as a rigid requirement. This can limit the ability to change specifications in response to new needs. It may lead to completion of a project when new information indicates its feasibility is questionable or the need for it diminished. Financial aid administration is predicated on change. Programs here today may well be gone tomorrow and with them their systems implications. New programs, not anticipated when planning was begun, may be initiated. A plan is a map for the future, but it must be flexible and adaptable to changing user requirements and technologies. To borrow a phrase from financial aid need analysis, the plan must provide a basis for judgment rather than a substitute for judgment.

What Is a Long-Range Plan?

A good long-range plan includes both user and technical aspects. The general parts can be defined as user statements, systems architecture, development plan, and project management and control.

User statements determine the quality of the entire systems development process. On the basis of these statements, priorities for systems development are fixed by management. The systems architecture is developed from these statements. It is important that the aid administrator be involved in outlining requirements to ensure a responsive systems design. The user statements should include the following components:

Goals and objectives of financial aid. What is the aid program at the institution really trying to accomplish? How important are service to students, safeguarding funds, research, and so forth? What needs should take precedence?

Relationship of financial aid to the institution as a whole. Why is there a financial aid office at the institution? How are the goals and the objectives of the institution furthered (or hindered) by financial aid?

Relationship of financial aid to other activities. What other areas are affected by financial aid, or impact on financial aid? When, why, and where? What can stop aid from flowing to students?

Volume of work in the aid process. How much work are you actually talking about? When is it heavy and when is it light? How rapidly do certain tasks need to be accomplished?

Necessary activities. What does financial aid really do? What components are interrelated and which are independent? Which are institutionally determined and which are externally imposed?

Throughout the development of these statements, the financial aid administrators must be sure they are stating needs rather than specifying solutions. The statements must also be realistic. "Immediately" is a convenient answer to how quickly tasks must be completed; practically, very few needs are immediate. The administrators should avoid asking for what would be convenient rather than what is needed. On the other hand, however, it is also important that the aid administrators not constrain statements of need within the limitations of the institution's existing data processing systems. That the current system cannot handle a problem should not prevent the problem's being stated.

Systems architecture defines the relationships among subsystems in their ultimate form and should include major systems and their significant components, major data bases, flow of data among systems, and significant issues of cycle and timing. The objectives of this element of long-range planning are to allow development projects to be started and coordinated. The systems architecture should also reveal significant equipment requirements or, conversely, equipment constraints. Where possible, however, this section of the plan should determine the ideal solution to the user needs identified in the earlier section.

Development plan describes in practical terms how it is proposed to get from today's environment to the ideal solution represented by the systems architecture. The development plan should include all the project activities—not just technical projects, but budgetary, organizational, and policy-making projects—necessary to implement the new system. All projects should specify tangible, identifiable, and measurable results. This section describes for each project the proposed scope, functions, objectives, schedule, and resource requirements. It should also specify the workload and resource implications for the users. It is at this point that the compromise between needs and resources, between the ideal and the realistic, is struck.

Project management and control identifies the appropriate decision makers during the developmental process. This section formally clarifies the responsibilities of the user and the technical staff both during the developmental efforts and once the system is on stream and operational.

Why Planning Fails

Some plans do fail. In embarking on a planning effort, administrators must be aware of that fact and the reasons it might happen. Forewarned is forearmed. The January 1975 issue of *Computer Decisions* provided an excellent outline of why data processing planning efforts fail:

1. The plan was unrealistic. It was incomplete or based on imperfect or unavailable (to the institution) technology.
2. The planning effort did not have the proper authority and control.
3. Developments occurred outside the planning effort.
4. There was a lack of support for the planning effort from the senior administration of the institution.
5. The plan atrophied because it did not have periodic and frequent review and updating.

In developing and using a long-range plan, the financial aid administrator can guide systems development and influence senior administration's priorities. Failures for the reasons stated above can be avoided if systems planning has continual attention from the aid administrator.

How to Start Systems Planning in the Financial Aid Office

To develop a plan for a financial aid data processing system, the following specific steps should be taken:

I. Prepare documentation of the current system (automated or manual), focusing on the problems that necessitate upgrading and on the opportunities for improved services or reduced costs that could be realized with an advanced system.
   A. What problems exist?
      1. Is service to students less than it might be? How long does it take to process a student application? Are there long lines outside the office? Are telephone lines always tied up? Have there been student complaints to the office? To the dean? Are the faculty, counselors, or other administrative officers dissatisfied with the service the financial aid office provides to their students? Can they get information about students and what has happened to them? Have they complained?
      2. Are there problems with accountability? Can the financial aid office respond appropriately and quickly to requests for data? Are reports to other offices within the institution always late? Do requests from external agencies get prompt attention and response? Are the reports submitted to external agencies correct? Can the office state its position at any time? Has there been an audit, an accreditation visit, or a program review that was less than favorable?
      3. Are resources used inefficiently or incorrectly? Are paper files overflowing? Has the office run out of storage space? Does the staff spend too much time trying to find documents and folders? Does data collection duplicate that available in other offices? Have the staff become paper shufflers rather than administrators?
   B. What opportunities for improvement are possible?
      1. Could financial or human resources be increased? Would better service facilitate increased enrollment? Could more money be made available to students? Could outside resources be attracted to the institution? Would it be possible to serve more students? Could retention be increased?
      2. Could expenditures be reduced or maintained at current levels rather than being increased? Would an improved system permit reductions in personnel or eliminate requests for more staff? What would happen to the operating budget in the short run? In the long run? What about space requirements? Would there be tradeoffs between current equipment and that needed for an automated system?
      3. Could there be better service to students, faculty, and

other administrative offices? Would there be more accountability and better stewardship of funds?

4. Could the process be simplified and made more understandable to the public, to colleagues, and to policymakers? Would there be public relations value in the changes that would be made? Could the institution become a leader in the community, in the state, among similar institutions?

II. Define the necessary resources for an in-depth study of the problem and the development of recommendations as well as the process that would be used to get from here to there.
   A. What resources would be necessary for a feasibility study?
      1. Who would perform the study? What financial aid office staff would be involved? What data processing staff would participate? Who would carry out their normal duties while the study was under way? Would outside consultants be involved? Where would they come from? How would they be selected?
      2. How much money would it cost? What would be the hidden cost of current staff involvement? How much would outside consultants charge? Would travel be involved? Who would be visited and what meetings would be attended? Would there be any preliminary computer expense? What about other costs like office space, clerical support, duplication?
   B. How long would it take? When could management expect a preliminary feasibility report? When could they get a final report? How would that relate to the institutional and office operating cycle? How would it relate to the budgeting cycle?
   C. How would others within the institution be involved?
      1. In the feasibility study itself? What other offices would be consulted about their available data? About the data they would need? How would personnel of those offices be involved?
      2. In the development of recommendations? Would a representative advisory group meet regularly? Would a group review the final report before its submission to management? How would minority views be recognized and reported?
   D. How would others outside the institution be involved?
      1. How would the experiences of colleagues and other institutions be included in the planning process? Would the feasibility study "reinvent the wheel"?
      2. How would the resources and needs of external agencies be represented in the planning process? What help and support could testing agencies, state planning boards, institutional governing boards or segment offices, sponsors and donors, local high schools, and so forth, provide? How would their information and service needs be evaluated and incorporated into planning?
   E. What are the probable outcomes? Without prejudging the results of the feasibility study, what kinds of resources should be committed to the development and implementation of a system? Are they within reason? Is it probable that the investment of time, personnel, and resources in a feasibility study will produce recommendations the institution can use?
   F. Are there policy barriers that must be overcome? Does the institution or segment have policies concerning the purchase of data processing equipment and systems that might conflict with the outcomes of a feasibility study? How can they be handled? What if they are not handled?

III. Obtain management approval and financing for the feasibility study.

IV. Conduct the feasibility study.
   A. How can the requirements of the system be defined?
      1. What are the functions of the office? How could they be changed to simplify the process without sacrificing the process? What new functions can be undertaken? What old functions can be discontinued? How do functions group themselves into processes?
      2. What data are needed to drive office activities? Which of those data are available through other offices and which must be collected anew? When are data needed? When can they be disposed of?
      3. What does the system produce? What individual student outputs are needed? What data and reports must be provided to other offices on the campus and to agencies and offices outside the institution? How many of those can be provided in machine-processable format and which must be hard-copy?
      4. What are the office schedules and cycles? When are input data available? When are they needed? When are outputs required? Is it necessary to operate more than one cycle at the same time? How long should files be retained in active status? In history files? When do volumes peak? When are they at a low point? How do the peaks and valleys of the office's cycle correspond with those of other offices? What deadlines are absolute and which could be changed if necessary?

The outcome of this planning process should be a preliminary design for a system that would best meet the requirements of the aid office, independent of the restraints of time, money, personnel, or equipment. Translation of the outlined planning steps into an actual system design will involve additional steps, which are described in the following chapters.

2. Why Financial Aid?

Proper planning for a financial aid system begins with a well-founded understanding of the role of financial aid in higher education. This activity does not have a corollary in business with which data processing personnel might be familiar, as would be the case with accounting or payroll. Financial aid, on the contrary, is a uniquely complicated array of programs and constituencies that tug at the administrator from many sides. For that reason it is critical to the definition of any financial aid system to begin with a review of the various roles and modes of student aid in postsecondary education.

Purposes of Student Aid

The National Task Force on Student Aid Problems[1] described the primary purpose of student aid: "to provide financial resources to students who would otherwise be unable to begin and complete the type of postsecondary education they wish to pursue." Within that general statement are purposes relating to access, choice, and retention.

Access programs seek to provide students with the resources necessary to enroll in any program of postsecondary education; usually, however, the least expensive postsecondary program is indicated. The federal Basic Educational Opportunity Grant Program is essentially an access program whose goal is to ensure that every student who wants postsecondary education has—from a combination of personal, parental, and federal sources—a minimum amount of money to devote toward postsecondary educational expenses. Access programs are typically administered outside the institution and are institutionally nonspecific; that is, access aid may be used at any institution chosen by the student. State scholarship programs often serve this purpose, although they are generally restricted to institutions within the state.

Programs that ensure *choice* make it possible for students to expand their options beyond the least expensive institution. Usually the programs seek in some way to reduce the price differential between the more expensive private institutions and the less expensive public institutions. Many state programs are intended to encourage choice; some, in fact, are called tuition equalization programs. They provide students who attend institutions whose tuitions are not subsidized through state appropriations with amounts that are sometimes equivalent to state subsidies at public institutions. These programs may or may not be administered external to the institution, but they usually are institutionally specific; the amounts of the awards depend on the institution (and costs) chosen by the recipient. The purpose of many institutional programs, especially those at private institutions, is to make the choice between private and public a relative one.

Programs whose objective is *retention* are generally less direct and less obvious. They backstop access and choice programs by helping to ensure that once students enter an institution, they have sufficient funds to complete the educational program. Many institutionally funded aid programs are of this type.

Another important purpose of student aid is the achievement of institutional goals and objectives. Indeed, much of the recent argument concerning program configurations has focused—overtly or covertly—on the impact the modifications would have on institutions and their health: which institutions would get more or less money in what ways. Financial aid—returned to the institution as student payments for tuition, fees, room, and board—represents a substantial portion of institutional income. Consequently, student aid can be used for institutional survival. Some state governments have elected to use student aid as an alternative to building or expanding public institutions and to maintain "institutional diversity" through indirect support of private institutions.

Student aid permits institutions to achieve goals beyond mere survival. Both public and private institutions can and do use student aid to make certain that students with desired characteristics are adequately represented. Student diversity is an important goal of some institutions; student aid funds make it possible to encourage diversity through subsidization of students with particular characteristics. In the wake of the *Bakke* decision, this purpose may be emphasized even more. Program diversity, whether academic, social, athletic, or other, can be facilitated through student aid by directing funds to encourage students interested in particular programs.

1. Also known as the Keppel Commission or Keppel Task Force, this voluntary organization of federal, state, private, and institutional agencies and individuals worked during 1974 and 1975 to improve the delivery system for student aid. Its major accomplishments were development of a common form of data collection and development of a common system for determining ability to pay for postsecondary education.

Finally, student aid can simply be a means of guaranteeing that institutional mission is discharged. If the mission is to provide a particular kind of education, the education of a particular kind of student, or the conduct of a particular kind of activity, student aid can bring to the institution students who fulfill or support the mission.

Student aid can also support educational purposes. Various work-study programs provide jobs because it is recognized that a "sound education is rooted in a background that includes work. . . . certain valuable attitudes, skills, and values inherent in work are not readily attainable in the classroom."[2] The I-worked-my-way-through-school motivation is frequently important in encouraging private contributions to student aid directly or indirectly through giving students jobs. Less frequently recognized but no less important is the educational value of learning how to budget and how to manage money. Very few institutions provide formal classroom experiences to expose students to the money management skills necessary for survival in society. At least for those who have need, the financial aid process can provide that experience.

Ultimately, however, student aid supports student purposes. It enables students to obtain the education that, at least in the past, has been the ticket to economic and social advancement. It makes it possible for students to attend the kind of institution they think best meets their needs and will help them achieve their broader goals. It provides a mechanism for self-improvement, self-enrichment, and self-realization. It provides the skills and the abilities individuals need to improve their communities, their families, and themselves.

Publics for Student Aid

The most important recipients are the students and their families. Whether postsecondary education benefits the recipient or the society more is debatable, but there is no argument that the recipient does benefit from education. Student aid equalizes the opportunity to obtain those benefits, although it cannot guarantee that they will be received. Current students, prospective students, and their families are the most direct beneficiaries of financial aid; they are the first and most important public served by the aid process.

The next most important public is the institution itself. Aid provides some financial support for the institution and, at least in part, for the students the institution needs if it is to survive. The third most important public served by financial aid comprises the other educational institutions (secondary schools, community colleges, undergraduate institutions) from which the students come. These institutions seek to move their students from one form and one level of education to another. Financial aid makes that transition possible.

Finally, the financial aid process must serve donors: the federal and state agencies that provide student aid funds, the private donors who make gifts to the institutions, the employers who provide students with jobs, and the banks and commercial lending institutions that provide loans to students. Most frequently this public is served through efficient and accurate administration of the programs; in other instances it is served through increasing awareness of student needs and resources, through identification of potential benefits and beneficiaries of student aid, and through simple information dissemination.

The relationship between the financial aid office and its publics is receiving increasing attention as each of the publics seeks a greater level of accountability from its agents. Government agencies and private donors for whom the financial aid office serves as a steward of funds expect the institutional aid office to distribute the resources provided according to often exacting program regulations and to account precisely for the funds distributed. Senior administration of the institution, realizing that student aid generally accounts for a significant part of tuition income, is eager to have the various programs properly managed, the goals met, and the amount received through aid programs as large as possible. Finally, students and their families reasonably expect the aid office to process their applications expeditiously and to make decisions equitably.

To achieve its purposes and serve its publics, the financial aid process has five major goals:

1. Equalization of educational and social opportunities for students
2. Correct administration of programs
3. Promotion of institutional goals and objectives
4. Service as an agent for social and educational change at the institution
5. Advocacy on behalf of students and the institution

Principles and Practices of Aid Administration

Over the years the financial aid profession has developed commonly accepted statements of principles and practices that describe how it should, and usually does, discharge its purposes and serve its publics. The most widely known are the principles and practices of the College Scholarship Service. Developed by representatives of the member and user institutions of the CSS, these statements describe the ideals toward which all aid operations strive and the practices they follow in achieving those ideals.

Principles of Student Financial Aid Administration

1. The purpose of any financial aid program—institutional, governmental, or private—should be to provide monetary assistance to students who can benefit from further education but who cannot do so without such assistance. The primary purpose of a collegiate financial aid program should be to provide financial assistance to accepted students who, without such aid, would be unable to attend that college.

2. Each college has an obligation to assist in realizing the national goal of equality of educational opportunity. The college, therefore, should work with schools, community groups, and other educational institutions in support of this goal.

3. The college should publish budgets that state total student expenses realistically including, where applicable, maintenance at home, commuting expenses, personal expenses, and necessary travel.

4. Parents are expected to contribute according to their means, taking into account their income, assets, number of

2. F. C. Adams and C. W. Stephens, *College and University Student Work Programs.* Carbondale: Southern Illinois University Press, 1970.

dependents, and other relevant information. Students themselves are expected to contribute from their own assets and earnings, including appropriate borrowing against future earnings.

5. Financial aid should be offered only after determination that the resources of the family are insufficient to meet the student's educational expenses. The amount of aid offered should not exceed the amount needed to meet the difference between the student's total educational expenses and the family's resources.

6. The amount and type of self-help expected from students should be related to the circumstances of the individual. In the assignment of funds to those students designated to receive financial aid, the largest amounts of total grant assistance should go to students with the least ability to pay.

7. The college should review its financial assistance awards annually and adjust them, if necessary, to reflect changes in the financial needs of students and the expenses of attending the institution. The college has an obligation to inform students and parents of the financial aid renewal policies for enrolled students at the time of the initial offer of financial assistance.

8. Because the amount of financial assistance awarded reflects the economic circumstances of students and their families, the college should refrain from any public announcement of the amount of aid offered, and encourage students, their secondary schools, and others to respect the confidentiality of this information.

9. All documents, correspondence, and conversations between and among aid applicants, their families, and financial aid officers are confidential and entitled to the protection ordinarily arising from a counseling relationship.

10. Concern for the student should be paramount. Financial aid should be administered in such a manner that other interests, important though they may be, are subordinate to the needs of students.

Practices of Student Financial Aid Administration

The members of the CSS Assembly in 1973 endorsed a set of practices for the administration of financial aid programs to provide guidance to institutions and to ensure the fair and equitable treatment of student aid applicants.

According to the preamble: "The increase in the number of students requiring financial aid in order to pursue postsecondary educational objectives and the increase in the number and variety of institutions awarding limited student aid funds require standards and guidelines for the responsible administration of student aid programs and the equitable distribution of funds. This statement of practices is intended to be used in conjunction with the Principles of Student Financial Aid Administration as a guide to institutions in the administration and coordination of their financial aid programs."

Motivation and information—Actively encourage students to utilize available financial aid services by:

1. Coordinating efforts with those of federal, state, community, and other agencies as well as those of secondary schools to encourage all students who want to continue education beyond secondary school to consider postsecondary education regardless of their financial circumstances.

2. Providing complete and current written information to students and parents about financial aid policies, full costs of attendance, application procedures, eligibility criteria, and available student financial aid.

Counseling—Make explicit the need for student financial planning by:

3. Cooperating with secondary schools and agencies in providing adequate guidance and counseling in financial planning.

4. Providing and maintaining financial counseling programs for all students who seek assistance.

Organization and administration—Establish administrative procedures that are responsive to the needs of students as well as the needs of instiutions by:

5. Conducting surveys to assist in the development of realistic student budgets.

6. Utilizing a recognized standard need analysis system consistently to determine the ability of students and their families to pay for educational costs.

7. Considering the student's individual circumstances when offering self-help aid and in determining the self-help expectation.

8. Using all forms of aid—grant, loan, employment—and considering other resources available to the student in order to provide the most equitable apportionment of limited funds to eligible students.

9. Meeting the full need of students to the extent possible within the institution's capabilities.

10. Providing award notifications that clearly indicate the type, amount, and conditions of the award including the expected amount of family contribution and other anticipated resources.

11. Providing students who are not offered financial aid with the specific reason(s) for the denial of aid and, to the extent possible, assisting them in finding alternative sources of aid.

12. Making awards to students who apply for renewal of aid by reviewing the student's financial circumstances and establishing the amount of aid needed with full consideration of the student's current need.

13. Advising secondary schools and state and other granting agencies that it is inappropriate to announce individual or aggregate aid awards received by student applicants on the basis of need.

14. Releasing parents' or student's financial aid records and information only with the written consent of the parents or the student except in accordance with due process of law.

15. Considering the inclusion of students, faculty members, and administrators on institutional committees that are responsible for establishing financial aid policies.

16. Coordinating the administration of financial aid through a central office to ensure consistency in making awards to students and the most efficient use of available funds.

17. Notifying students of financial aid decisions as early as possible in order to serve the students' best interests, and when possible coordinating these notifications with those of admissions decisions.

18. Sharing information with other institutions and agencies about mutual aid candidates to ensure comparable financial aid awards, thereby permitting a student freedom in choosing an institution.

Research and professional development—Continue to contribute to the evaluation and progress of the profession of student financial aid administration by:

19. Developing and conducting research programs that will contribute to the solution of problems and advancement of knowledge in the field of financial aid.

20. Conducting periodic reviews of the institution's total financial aid process in order to serve students and the institution better.

21. Encouraging the continued professional development of financial aid administrators by providing opportunities to join and participate in professional aid administrators' associations and organizations dedicated to the advancement of sound principles and practices and the extension of knowledge in student financial aid administration.

Functions of an Aid Office

What an aid office actually does depends on a number of variables, largely unique to the institution in which it operates. Aid offices of public institutions have functions somewhat different from those in private institutions; two-year institutions have functions not common in four-year institutions. Some state aid programs require substantial activity by the institutional aid office, while others simply require end-of-year reporting on enrolled students. Institutions with automated student-accounts processing systems require different activities from their aid offices than do those where all student transactions are on a cash basis.

Too frequently financial aid administration is seen as a business function, concerned solely with disbursing and accounting for money. The real functions of an aid office, however, include a mixture of academic, social, personal, and financial counseling; complicated accounting and business activities; and massive communication, research, and reporting activities. The following list, taken from *A Design for a Model College Financial Aid Office*,[3] recites functions that would be common to most aid offices, but is intended to be demonstrative rather than inclusive:

I. Counseling about typical student expenses, financial aid opportunities, and problems associated with borrowing
  A. Conduct regularly scheduled meetings to provide needed information to specific groups
    1. Before admission to college
      a. Potential students, both first-time freshmen and transfer students who request information
      b. Applicants for financial aid
      c. Parents' groups
      d. Local scholarship donor groups
    2. During the students' college years
      a. Aid applicants
      b. Aid recipients
      c. Students failing to make normal progress or planning to transfer or withdraw
    3. Before graduation
      a. Aid recipients
      b. Potential applicants to graduate and professional schools who request information
  B. Confer with individual students, on the initiative either of the student or of the financial aid administrator
    1. Student expense budgeting
    2. Personal and family situations that might be related to financial needs and opportunities or changes in family circumstances
    3. Student rights and responsibilities
    4. Money management

II. General administration
  A. Supervise office functions
    1. Develop and review financial aid applications and other forms used in the administration of aid programs
    2. Develop and review student consumerism materials
    3. Establish, and document in a written manual, office routines and procedures
    4. Assign duties to office personnel and document in written job descriptions
    5. Provide routine supervision to personnel
    6. Organize and implement an in-service training and development program for office personnel
  B. Review state and federal legislative changes to assure institutional conformity with provisions
    1. Issue new directives to office personnel
    2. Provide informational memorandums to others at the institution and in the community concerned with matters relating to student aid
    3. Update office forms, procedures, policies, and manuals
  C. Review applications for financial aid
    1. Evaluate financial status of the applicants in connection with aid programs that require demonstration of financial need
    2. Evaluate supporting records of the applicants—personal, academic, and so forth
    3. Determine eligibility of the applicants for consideration for the several types of programs within the three major forms of aid
  D. Allocate resources of those students who are to receive assistance
    1. Select applicants to whom aid will be awarded
    2. Determine the amount of aid to be awarded and how the different kinds of aid will be packaged to meet student needs
    3. Notify recipients, in writing, of the way in which their need was determined, the amounts and forms in which aid is being offered to them, and any conditions of the aid offered
    4. Notify students who cannot be aided of the reasons their applications could not be approved, alternative sources that may be available to them, and procedures they may follow if their circumstances change
    5. Inform students who accept offered assistance regarding the procedures they must follow to secure disbursements or to have awards properly credited to their accounts at registration, how to continue to remain eligible, and how to request renewal funds
    6. Assure that proper required documentation is included in every student's file

3. William D. Van Dusen and John J. O'Hearne. New York: College Entrance Examination Board, 1980, pp. 35-39.

7. Review any student appeals according to institutional policy and procedures established by the advisory committee

E. Authorize disbursement of funds
   1. Report to the appropriate fiscal authority on the campus the amount and form of each award made and the dates and amounts of individual disbursements to students
   2. Describe any contingencies on the release of funds
   3. Cancel unclaimed awards and reallocate funds to other students

F. Review and plan
   1. Evaluate the functions and activities of the aid office
   2. Prepare planning memorandums for aid office activities in future years
   3. Prepare proposed budgets of student aid funds
   4. Prepare budget requests for the staff and the operation of the aid office
   5. Hold regular staff meetings to collect information and advice about how operations could be improved
   6. Prepare recommendations for changes in the institution's policies for student financial aid
   7. Attend and participate in meetings concerned with the development of institutional policies on financial aid

III. Student motivation (in cooperation with the admissions office, the special programs staff, and so forth)

A. Visit secondary schools and community colleges
   1. Participate in meetings and discussions on the general topic of attending college
   2. Assist in programs and activities designed to stimulate interest in attending a particular college

B. Conduct workshops and other informational activities on financial aid
   1. Faculty, administrators, and students within postsecondary institutions
   2. Secondary school and community college administrators and faculty
   3. Secondary school and community college students and their parents
   4. Community agencies, educational information centers, and other nonschool sources concerned with guidance and counseling prospective students
   5. Special agencies serving target populations such as racial or ethnic minorities, senior citizens, or women
   6. Civic, patriotic, and fraternal organizations

IV. Development of aid resources

A. Calculate aggregate financial need
   1. Of currently enrolled students
   2. Of potential students who might be enrolled under different policies or procedures

B. Describe the status and needs of particular groups of students who might be of interest to potential donors and sponsors of funds
   1. Arrange individual appointments and meetings with persons who might provide funds or employment opportunities
   2. Participate in the programs of local organizations who might sponsor student aid funds

C. Develop or support recommendations for legislative changes or new government student aid programs

D. Continue to cooperate and to consult with representatives of existing sources of funds

V. Research and evaluation

A. Initiate and continue evaluations of the institutional aid program

B. Conduct and encourage studies on the impact of the aid program on the students and the institution

C. Summarize applications
   1. At the close of each awarding period, or at least annually, review applications for financial aid
   2. Gather data on such characteristics of the applicant group as sex, ethnic background, family size, income, student expense budgets, and self-help provided from noninstitutional sources

D. Review patterns of aid offer acceptance, rejection, and modification to refine packaging procedures and allowable overcommitment to assure full utilization of funds

E. Initiate self-audits of the aid operation and participate in external audits and program reviews

F. Prepare necessary reports
   1. Annual report to the institution
   2. Reports to agencies of the state and federal governments both to recapitulate activities and to initiate requests for additional funds
   3. Annual report to the donors or sponsors of funds

Some of the activities in this list lend themselves to automation and can be included in, or subsumed by, a financial aid data processing system. Others, particularly those involving the one-on-one counseling of students, can be enhanced by a financial aid data processing system. By providing the aid administrator with up-to-date, accurate, and complete information about students and by freeing time for talking with students, the system can facilitate all the administrative functions of the aid office.

3. What Is Financial Aid?

Financial aid for students typically comes in three forms: grants, loans, and jobs. Usually all three aid forms are combined in a package intended to approximate the full need of the student recipient. Grants may also be referred to as gift aid or free money; loans and work frequently are called self-help. Aid comes from a variety of public and private sources, but the most generally available aid comes from the federal government. This chapter provides a brief overview of these programs, with an emphasis on the kinds of problems they may present in the implementation of a data processing system.

Basic Educational Opportunity Grants (BEOG)

The federally funded Basic Grant program is intended to be the cornerstone on which all other aid to students is based. It is an access program, assuring eligible students that resources of at least half their costs, up to a maximum of $1,800 (for 1979-80) per year, will be available from the combination of their own, their parents', and federal resources. Basic Grants are available to any undergraduate student enrolled half-time or more. Figure 1 depicts the program's procedures.

Basic Grant award amounts are currently limited to one-half of allowable costs determined by the institution according to regulations and formulas provided by the program. Eligibility is determined by an independent contractor according to a schedule of family contributions established annually by Congress. Data for eligibility determination can be submitted on the Financial Aid Form (FAF) of the College Scholarship Service (used by most institutions for their own determinations of financial need) or on a separate Basic Grant application form. Students receive in the mail a Student Eligibility Report (SER), which shows their eligibility index. The SER is presented to the institutional aid administrator, who actually determines the award amount from a schedule provided by the Basic Grant program.

Awards are disbursed by the institution to enrolled students. Funds to reimburse the institution are periodically forwarded in response to requests from the institution, which provides the Basic Grant program with periodic progress reports on individual recipients and end-of-year reports on all recipients.

One of the most significant problems with the program is that BEOG recipients do not necessarily apply for other assistance from the institution. The students may appear in the aid office with a Student Eligibility Report entitling them to assistance, without having complied with any institutional application procedures. After the student enrollment and other items have been validated, the BEOG-only students must then be entered into the financial aid data processing system even though they are not being considered for institutionally administered aid. Often, however, such processing must be done on the spot. For some institutions other difficulties are the timing of the promulgation of the final family contribution schedule, processing the Basic Grant eligibility determinations, and distributing the award schedule. Often it is not possible to know precisely which students will receive Basic Grants and in what amount at the time the institution wishes to distribute announcements of aid awarded from other sources. The ability to simulate Basic Grant family contribution calculations and to estimate Basic Grant award amounts may be an important element of a financial aid data processing system for these institutions.

Another problem concerns program regulations that affect eligibility and disbursement. Institutions are increasingly being drawn into an activist role in program administration by having to validate the contents of applications and monitor the flow of disbursements.

Supplemental Educational Opportunity Grants (SEOG)

A second federally funded grant program is the SEOG. Grants are available to students at most institutions. It is known as a campus-based program because eligibility determinations are made and award amounts established by the institution according to the legislative parameters and regulations promulgated by the Office of Education. Figure 2 shows the procedures.

The SEOG awards are available to undergraduate students who are enrolled at least half-time and whose family contributions (as determined by the institution according to a system approved by the Office of Education) do not exceed one-half of their student expense budget (as determined by the institution according to its own rules and regulations). Award amounts range from $200 to $1,500 per year. They may not exceed one-half of the total student aid available through the institution. Included in the total student aid are state scholarships, institutional grants from nonfederal sources, work provided through the institution (even though it may be paid for

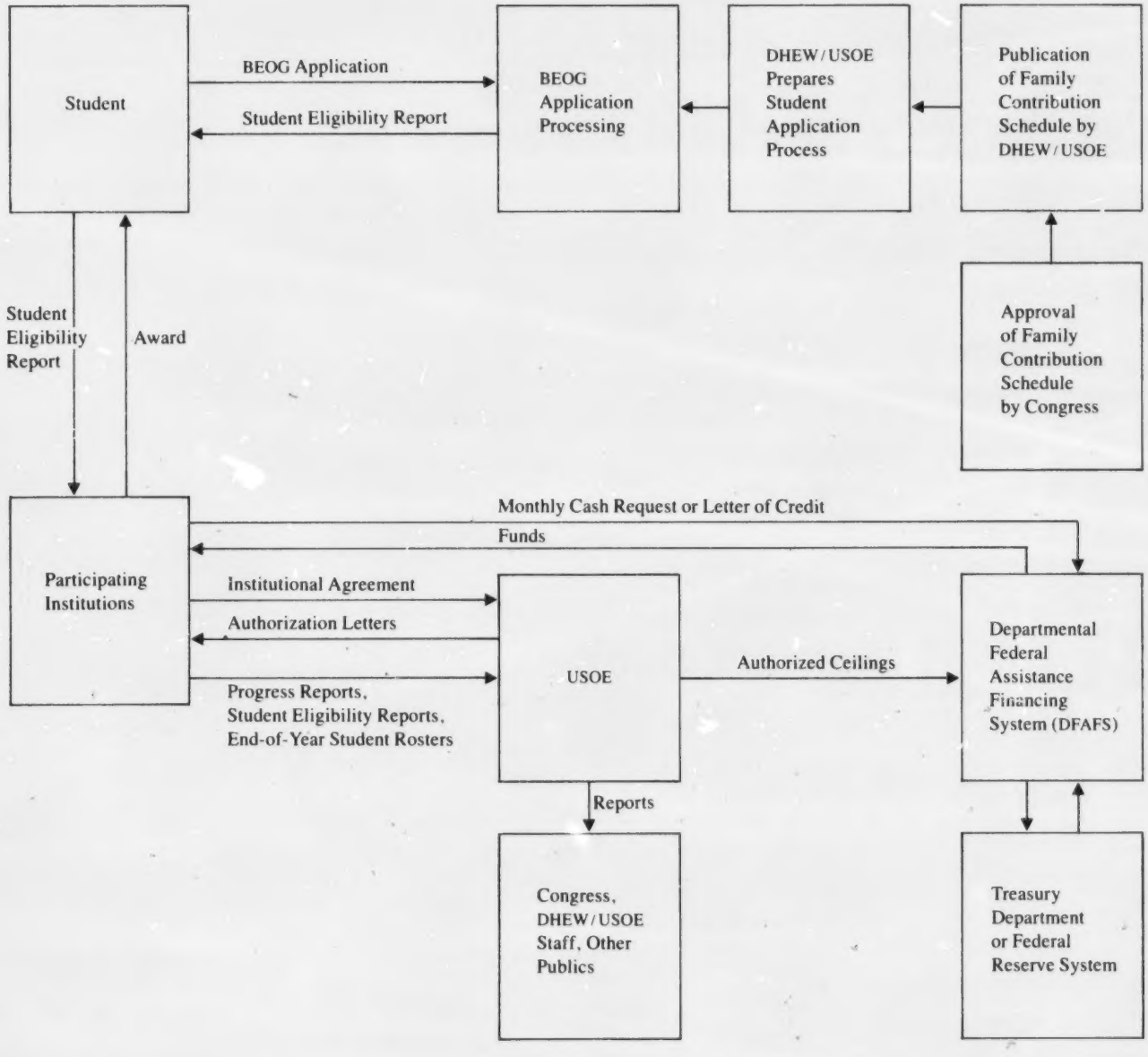
from federal funds in the College Work-Study Program described below), and loans.

Funds to support the SEOG program come to the institution on the basis of an application submitted in the fall of each year. Advances against approved institutional authorizations are requested from the federal government at periods determined by the institution. Funds to individual students are paid by the institution in at least two installments.

The family contribution and budget used to determine SEOG and other campus-based program eligibility can, and typically do, differ from those used in determining Basic Grant eligibility and award amount. The differences are not systematic. The institutional data processing system supporting the financial aid operation should have the capability to calculate campus-based need in addition to simulating the eligibility determinations made by the Basic Grant processor.

The institution is responsible for ensuring that students do not receive SEOG award amounts of less than $200 or more than $1,500 in any one academic year and that the total of all SEOG awards does not exceed $4,000. For students transfer-

Figure 1. Flowchart of the Basic Educational Opportunity Grant Program*



**This flowchart and subsequent flowcharts in Chapter 3 are adapted from Report to the Secretary: Recommendations for Improved Management of Federal Student Aid Programs. Washington, D.C.: The Student Financial Assistance Study Group, 1977.*

ring from another postsecondary institution, this may involve collection and evaluation of information about the aid the student received at that other institution.

Another difficulty in the institutional administration of the SEOG program is the requirement that the awards be matched by at least an equal amount of assistance from other eligible sources. The initial award package offered to the student usually includes other aid in amounts and kinds sufficient to meet this requirement. But many students decline some portion of the initial aid package. Others may accept but fail to actually claim some portion of their aid. Matching funds from employment programs must be monitored closely—particularly as the academic year comes to a close—to assure that students have earned amounts sufficient to qualify as their matching award.

National Direct Student Loans (NDSL)

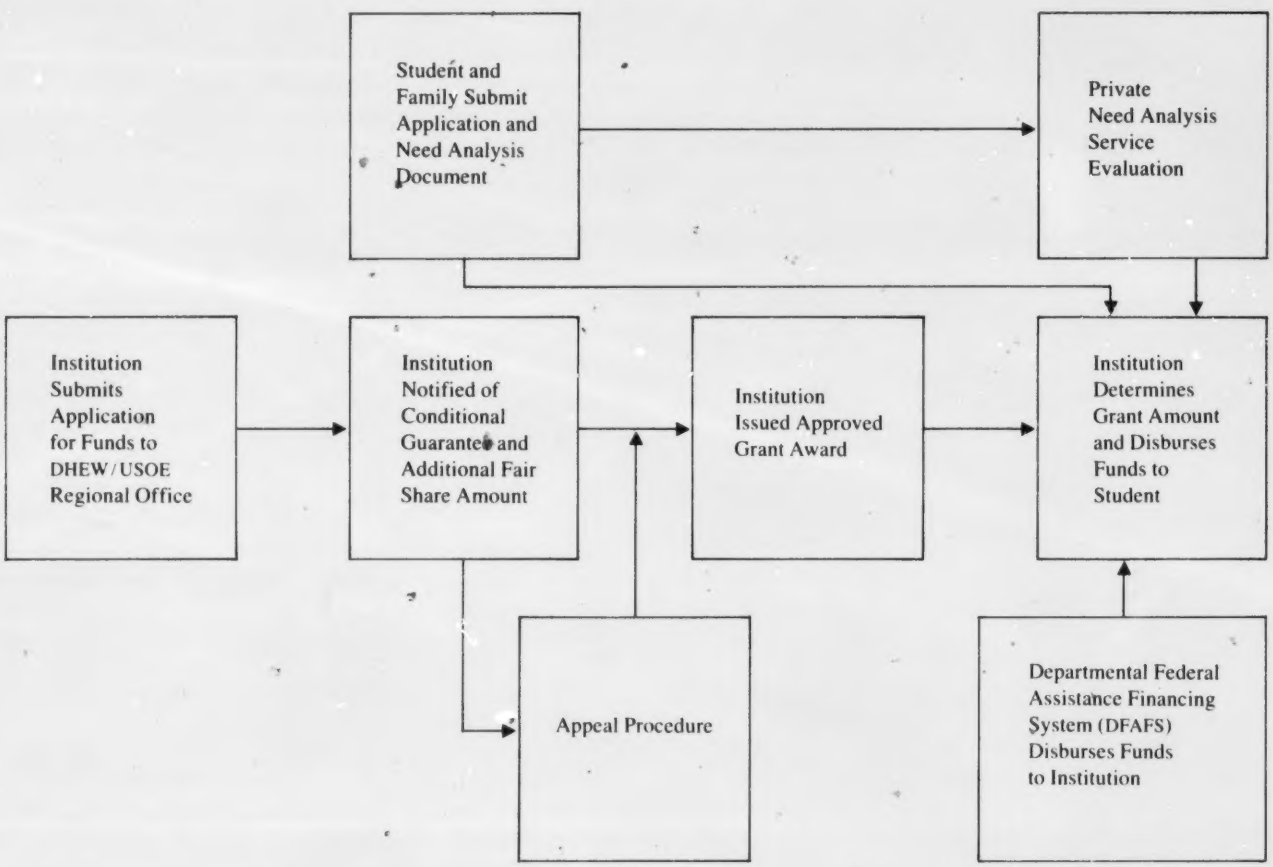
Another source of campus-based support for students comes from the federally funded National Direct (formerly Defense) Student Loan Program. As with SEOG, eligibility and award amounts are determined by the institution according to parameters set by the federal government. The system is diagramed in Figure 3.

The NDSL awards may be made to either undergraduate or graduate students enrolled at least half-time. The same family contribution and budget are used for the determination of SEOG and NDSL eligibility. Loans may total $2,500 to students who have completed less than two years of study (at their current or other institution), $5,000 to students who have completed two years of study, and $10,000 (total aggregate) to students in graduate and professional programs.

No interest accrues on the loan while the student continues enrollment at any postsecondary institution at least half-time. Interest at the rate of 3 percent, simple, begins to accrue nine months after termination of at least half-time study. Minimum monthly or quarterly repayment amounts may be established by the institution, although repayment may extend as much as 10 years after graduation or withdrawal. Accrual of interest may cease and repayments may not be required during periods of service in the Peace Corps, Vista, or the military. Some portions of some loans may be canceled for various kinds of teaching service. All unpaid interest and principal are canceled in the event of the borrower's death or permanent or total disability.

Administration of the National Direct Student Loan Program involves extensive and fairly complicated calculations of

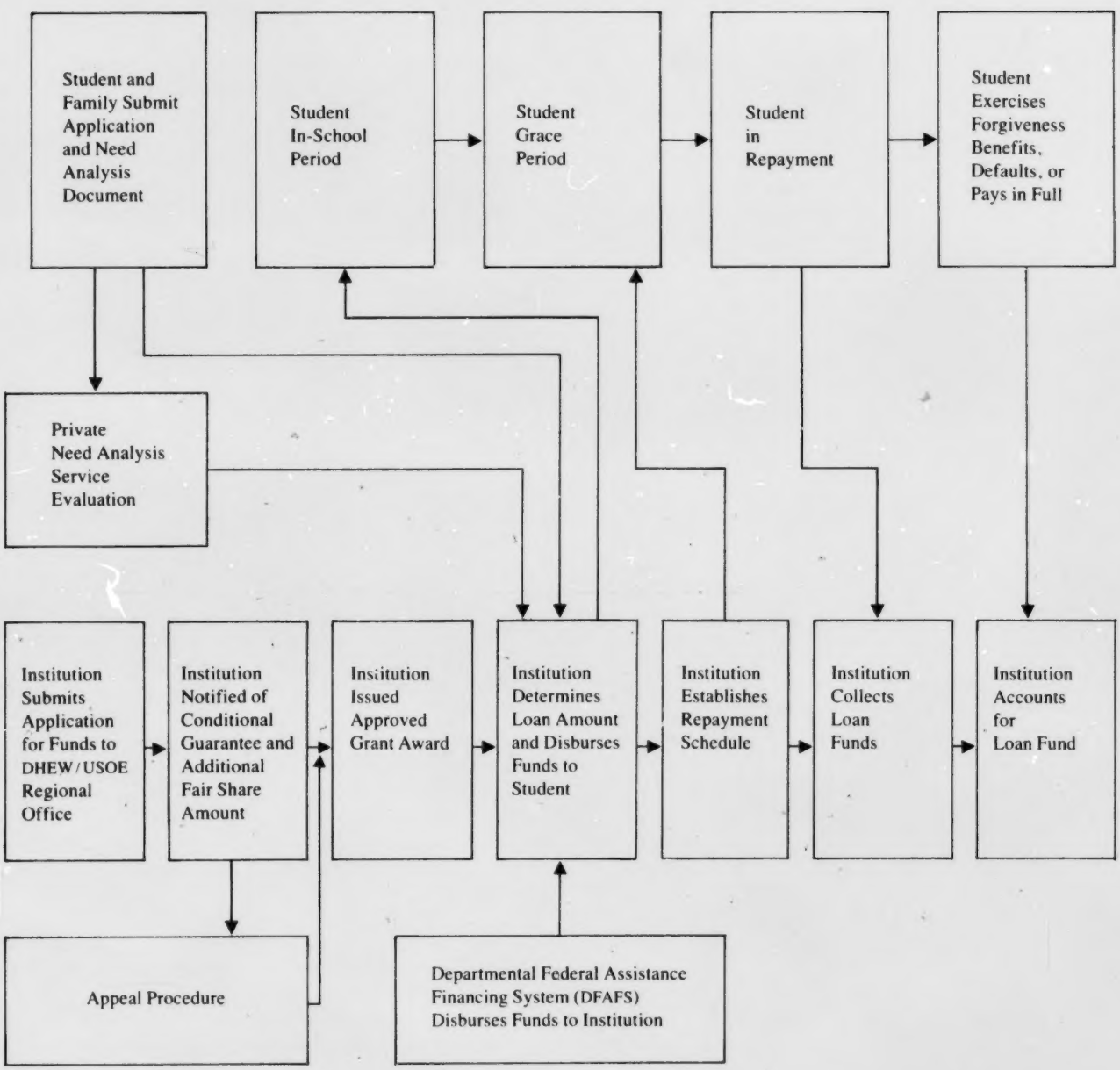
Figure 2. Flowchart of the Supplemental Educational Opportunity Grant Program


Student and Family Submit Application and Need Analysis Document
Private Need Analysis Service Evaluation
Institution Submits Application for Funds to DHEW/USOE Regional Office
Institution Notified of Conditional Guarantee and Additional Fair Share Amount
Institution Issued Approved Grant Award
Institution Determines Grant Amount and Disburses Funds to Student
Appeal Procedure
Departmental Federal Assistance Financing System (DFAFS) Disburses Funds to Institution

repayment schedules, interest accrual, and cancellations and deferrals of interest and principal over rather long periods of time—18 or 20 years, for example, for a student who borrowed as a freshman, remained a student through an MD degree, served a few years in the military, and then took the maximum 10 years to repay the loan. An extensive system of periodic billing, collection, and legal activities are specified by the Office of Education as the "due diligence" the institution agrees to exercise in accepting the funds. The system must maintain address information for students and former students; receive, process, and record certificates for additional study or service in appropriate areas; notify students of actions taken or not taken; bill regularly; and otherwise exercise considerable care and attention to avoid delinquent loan collections. Some institutions find this task beyond their interests or capabilities and subcontract with an outside fiscal or data processing agency. In that event the institutional system must include appropriate interfaces and data transmission procedures to ensure that loans coming into the collection process are handled correctly.

The institution is required to match allocations of funds made by the federal government to support National Direct

Figure 3. Flowchart of the National Direct Student Loan Program


Student and Family Submit Application and Need Analysis Document
Student In-School Period
Student Grace Period
Student in Repayment
Student Exercises Forgiveness Benefits, Defaults, or Pays in Full
Private Need Analysis Service Evaluation
Institution Submits Application for Funds to DHEW/USOE Regional Office
Institution Notified of Conditional Guarantee and Additional Fair Share Amount
Institution Issued Approved Grant Award
Institution Determines Loan Amount and Disburses Funds to Student
Institution Establishes Repayment Schedule
Institution Collects Loan Funds
Institution Accounts for Loan Fund
Appeal Procedure
Departmental Federal Assistance Financing System (DFAFS) Disburses Funds to Institution

Student Loans on a $1-to-$10 basis. Unlike the SEOG program, this matching takes place at the macro level—that is, once for the entire federal allocation rather than individually for each student. Collections of interest and principal are distributed to institutional and federal accounts, but may be reloaned to other students under the same conditions as the original contributions.

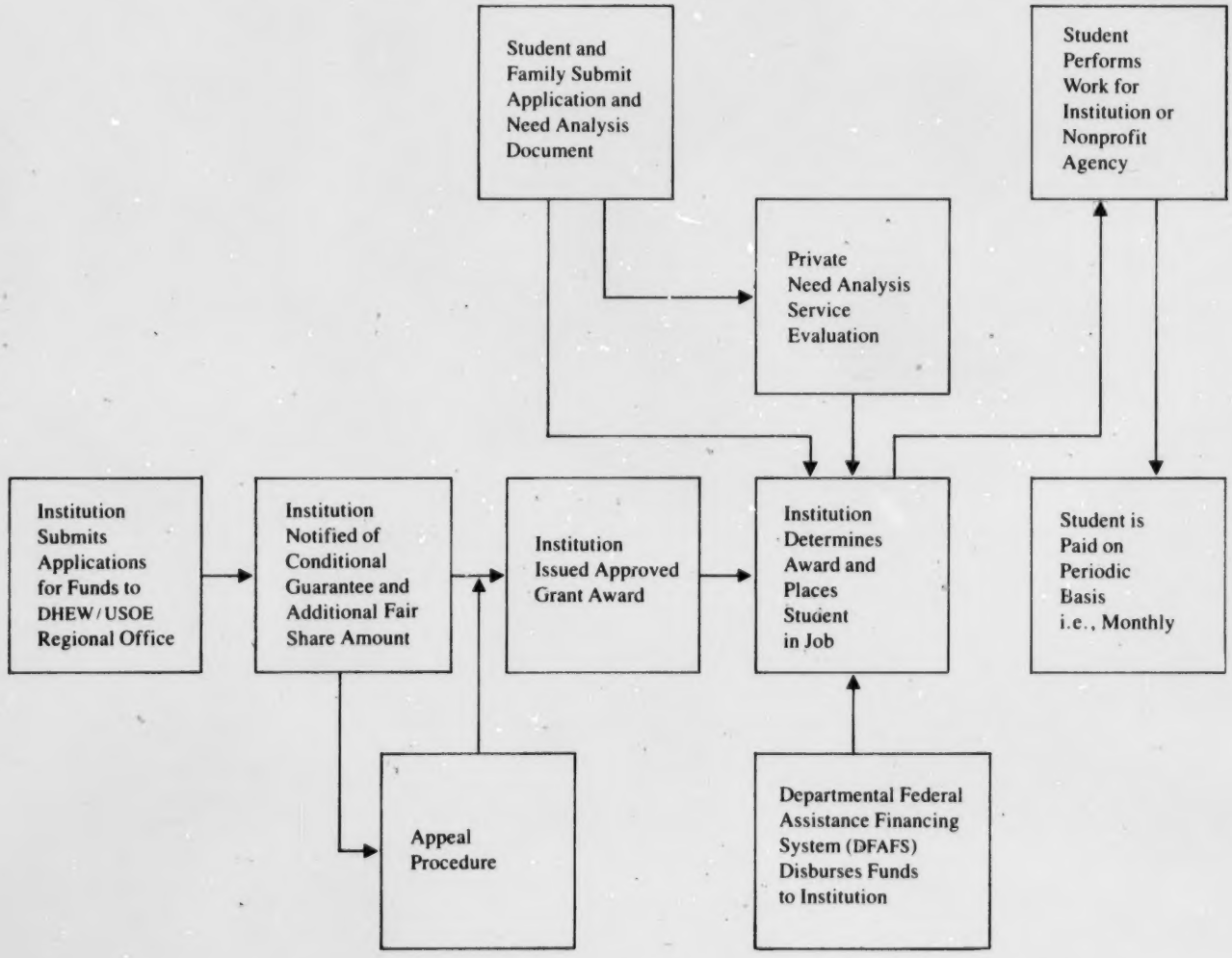
College Work-Study (CWS)

The federal government also provides institutions with funds to support the employment of students in on-campus and off-campus jobs. Employment under this program is available to any undergraduate or graduate student who is enrolled at least half-time. Eligibility and award amounts are determined by the institution, usually in the same manner as for SEOG and NDSL. Wages are paid at rates established by the institution and the employer. There is no maximum on the aggregate amount of earnings other than that they may not exceed the financial need that has been calculated by the institution.

Up to 80 percent of the student's wages may be paid from federal funds. The remainder comes from institutional resources (for employment performed on campus) or from other agencies (for employment performed off campus). Off-campus employment is governed by formal contracts between the institution and the employer. Those contracts stipulate the exact relationship of federal and employer funds in the student wages, responsibility for insurance payment of social security contributions, and other conditions of employment. (See Figure 4.)

The major problem in administering the College Work-Study Program is monitoring actual student earnings in relation to the amounts they are expected to earn. Earnings paid from the program may not exceed an authorized level determined when the award was made. If the rate of pay changes or the number of hours worked increases, the authorized level may be reached sooner than expected, requiring renegotiation of the award. If the student does not work as many hours

Figure 4. Flowchart of the College Work-Study Program


Student and Family Submit Application and Need Analysis Document
Student Performs Work for Institution or Nonprofit Agency
Private Need Analysis Service Evaluation
Institution Submits Applications for Funds to DHEW/USOE Regional Office
Institution Notified of Conditional Guarantee and Additional Fair Share Amount
Institution Issued Approved Grant Award
Institution Determines Award and Places Student in Job
Student is Paid on Periodic Basis i.e., Monthly
Appeal Procedure
Departmental Federal Assistance Financing System (DFAFS) Disburses Funds to Institution

as expected, the earnings may be insufficient to meet the required matches for the SEOG award.

Federally Insured/Guaranteed Student Loans (FISL/GSL)

The federal government also provides guarantees of repayment and subsidy of interest charges for loans made to students by banks, credit unions, savings and loan associations, and other commercial lending institutions. The institution is required to certify that the student is enrolled and that total aid resources, including the proposed loan, do not exceed the cost of education. Other eligibility determinations are made by the lending institution. In some cases the institution may act as disbursing agent in transmitting a check from the lending institution to the student.

These loans are administered under a variety of federal and state agreements. Characteristics of the loan programs may vary from state to state and, within a state, from lending institution to lending institution. Usually institutional involvement in the program administration is limited to certifying that the student is enrolled and informing the lender when enrollment ends. The FISL/GSL recipients are not required to apply for other aid from the institution and may or may not demonstrate financial need according to the institution's usual standards.

Other Federal Programs

The federal government provides assistance to students through a variety of other programs such as the Law Enforcement Education Program (LEEP), Health Professions Program, Bureau of Indian Affairs, veterans' benefits, and social security benefits. In some programs the institution makes eligibility and award determinations; in other programs these determinations are made by the government.

State Scholarship and Grant Programs

Every state has some form of scholarship or grant program for undergraduate students. Some states also have programs for graduate students. Terms, conditions, and involvement vary from state to state, but the institution's major responsibilities are typically in acting as disbursing agent for the state award and in reporting the enrollment status of the recipients. In some states the awards can be predicted according to formulas that might be made part of the data processing system supporting the financial aid office; in others the award receipt and the amount cannot be predicted.

Institutional and Private Aid Programs

Most institutions direct some of their own resources, whether from current income or endowment, to the support of student aid programs. They solicit contributions from private agencies, organizations, and businesses to aid students. The variety of such programs is endless. They require detailed monitoring of student eligibility, according to criteria established by the institution or the private donor, and year-end reporting.

4. What a System Might Do: Debating Alternatives

The operational configuration and program requirements of postsecondary institutions differ, if only in slight details, to the point that nearly every financial aid data processing system represents a unique application. For any given institution the requirements reflect the combination of programs, personnel, problems, and potentials in that particular environment. Some commonalities among aid programs and among aid information requirements, however, suggest general systems requirements that every institution should consider during the planning process. This requires a thorough understanding both of the functions to be performed in the automated aid system and of the way those functions are currently performed in the manual system. The basic activities in both environments are the same: Student applications for aid are meshed with need analysis and admissions information. These combined data become the basis for a student record, whether in a file cabinet or on a computer tape. Awards are offered, adjusted, accepted, disbursed, and accounted. Dynamically maintained student and fund data bases—again, whether in a ledger book completed with quill pen or as bytes of a computer tape record—are required. Reports must be generated to describe the status of those data bases.

Functions of a System

The functions of a financial aid office can be grouped into six modules, shown in Figure 5, which are duplicated in most offices whether they use a manual or an automated system:

1. *Application tracking.* Any system must keep track of data about the aid applicants. These data include not only academic, personal, and financial information but such operational information as the date the application was received, the types of aid requested, and the actions taken. Ideally, this module will identify automatically those applications ready to be reviewed.

2. *Need analysis.* Most aid is based on need, and analysis of the student's financial need is one of the most common, complicated, and mundane tasks of the aid administrator. Most systems, whether manual or automated, rely on input from the national need analysis agencies for the bulk of these activities; but some systems attempt to replicate the national services through local activities. The computer system should aid in budget construction and the calculation of total resources.

3. *Packaging.* Grants, loans, and jobs are combined in different ways. Development of the aid package requires information about individual student needs, aggregate information about all students with like characteristics, and fund availability. Some systems may even package automatically, based on user guidelines.

4. *Award notification.* Federal regulations and good counseling practice make it imperative that the institution provide the student with a clear notice about the financial aid package and its specific terms or conditions.

5. *Disbursement and fiscal management.* Once the students accept the aid package offered, someone must actually distribute the money to them. The aid system, manual or automated, is responsible for authorizing those disbursements and the conditions under which they are or are not to be made. The system must also support the inevitable reconciliations that follow disbursement.

6. *Research and reporting.* Finally, the aid system is responsible to federal, state, private, and institutional officials for describing how the money was spent.

These aid system modules are analyzed in detail in Chapter 5. Conceptualizing the process as these six modules helps to understand the more detailed depiction of activities shown in the schematic diagram (Figure 6).

Each institution that considers data processing system implementation must look at its aid operation in the manner described above, must elaborate on the real relationships and requirements at the institution, and must state system specifications that take into account the ways in which that institution discharges these and other functional activities. These criteria identify the opportunities for, and constraints on, the system to be implemented.

Common Characteristics

As with generalizable system requirements, some common characteristics should be present in an automated financial aid system. Four are probably essential:

1. *Comprehensive data files.* The financial aid system must be able to accept information in varying formats from a number of different sources. It must accept and retain biographical, academic, and financial information. It must be able to cope

Figure 5. Financial Aid Data Systems Overview

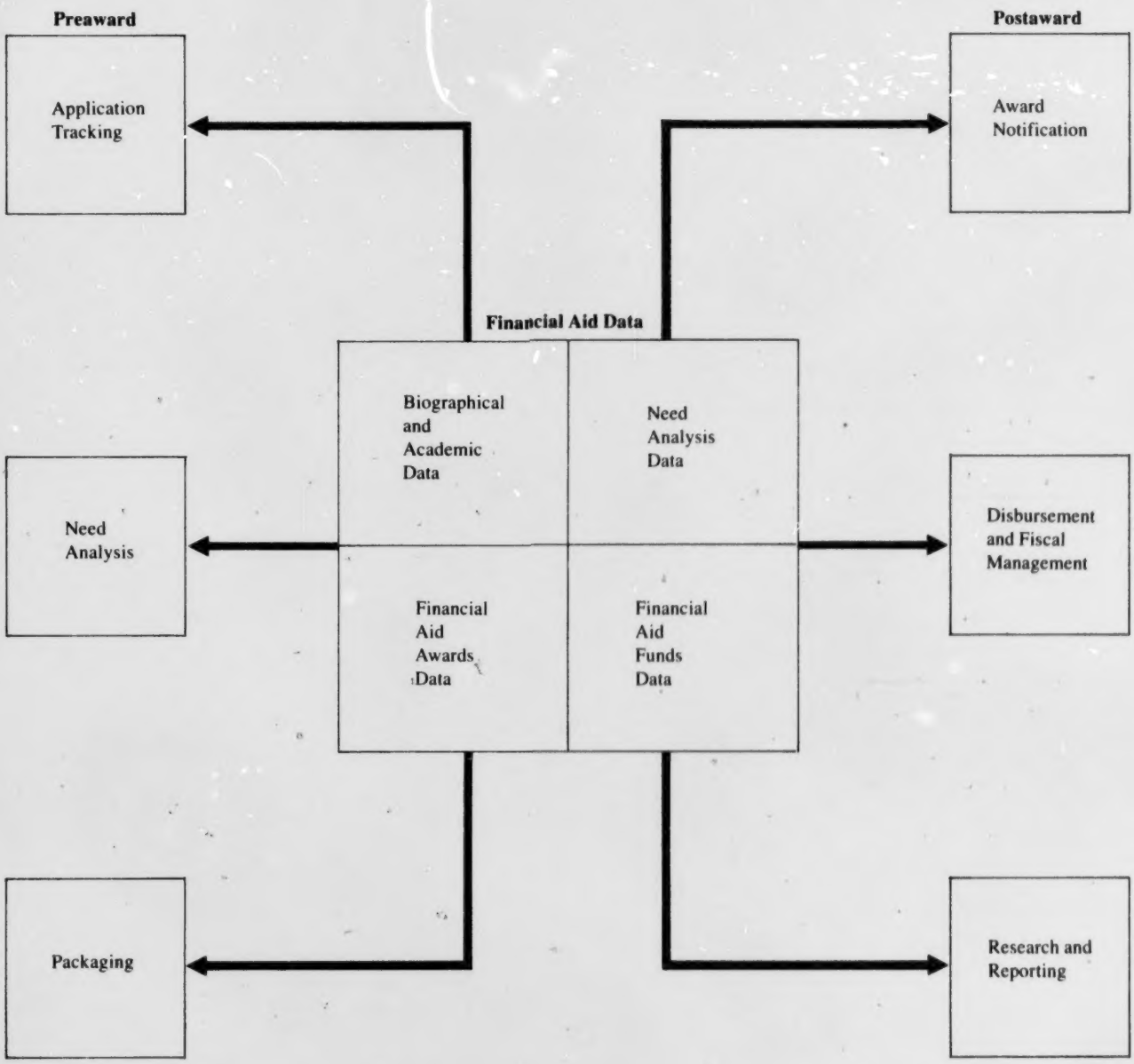
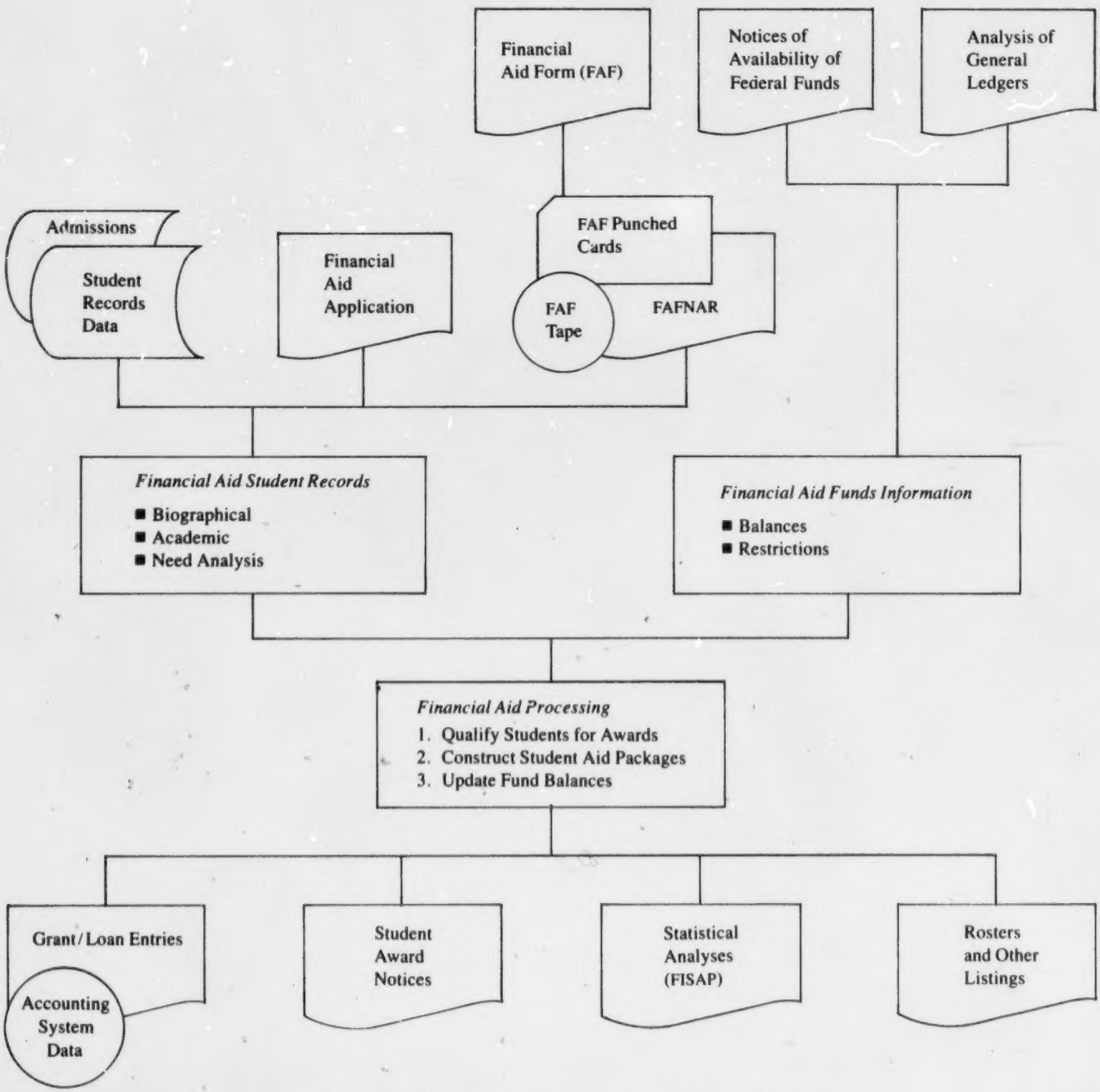


Figure 6. Overview of Integrated Financial Aid Data Processing System



with frequently changing needs in the information that must be collected.

2. *Multiyear operations.* Most aid offices are involved with two or three operating years at the same time. The awards made last year are being disbursed this year, while the applications for next year are being processed to become next year's awards. The same student frequently appears in each year's files with different characteristics. And then there is summer school, which frequently overlaps two years. The financial aid data processing system must have the capability to maintain and process records concurrently for the same students in different statuses.

3. *Flexibility.* As mentioned earlier, aid administration is predicated on the probability of change. Unless the data processing system can mirror these changes, it will soon become as outdated as the manual system it replaced.

4. *Documentation.* Financial aid and data processing personnel change almost as frequently as do the financial aid programs themselves. Unless the financial aid data processing system is fully, accurately, and currently documented, it will not survive. It is crucial for the longevity of the system that its operation does not depend on one individual or one group.

The characteristics of individual systems vary significantly from institution to institution. One institution may find that the capacity to handle large numbers of different student aid funds is mandatory; another may find that the ability to handle many awards to the same student is more important. Some may require elaborate interfaces with other institutional, segmental, or state data systems, while others are content with a stand-alone system that serves only the needs of the aid office.

The careful planning process outlined in Chapter 1 identifies and documents these needs. With full participation by the aid officer and staff, the data processing technicians, and the senior administrators, this exercise will produce a fail-safe set of system design specifications to ensure that the needs and interests of all parties are met in the most efficient and effective way. Some decisions that must be made in the development of those specifications, with which the aid administrator might wish to become familiar, are discussed in the following sections.

Mini versus Maxi

A major innovation in recent years has been the advance in minicomputer technology and its reduced costs. Although of more limited capacity than the traditional mainframe, these systems are typically inexpensive. They are particularly suited to a single-user application in a stand-alone system, and they generally support on-line processing. On the other hand, conventional large-scale mainframe computers have greater capacity to store and process information and are more adaptable for multiuser applications and sophisticated interfaces with other institutional offices. They are more apt to process in the batch mode. Increasingly, however, the distinctions between these types of hardware are blurring.

If the institution is installing or replacing computer equipment on which the aid system will operate, there may be a mini-versus-maxi decision to be made. For the most part, however, this decision does not concern the aid administrator. The computer used to operate the system is "transparent" to the user as long as it can meet operational needs and specifications. If an accurate, complete, and timely fiscal operations report has been generated by the system, the aid administrator should be unconcerned whether it required all the capacity of the machine or only a minute portion of the capabilities.

Another trend gaining increasing interest is called distributed processing, in which much of the heavy work (for example, on-line inquiry) is off-loaded from a traditional mainframe to a smaller, dedicated minicomputer. The financial aid data base will be distributed to the minicomputer, but will interface to other systems through the larger institutional host processor.

On-Line versus Batch

An on-line system displays or accepts information reflecting current activity as soon as it is requested. On-line systems are interactive and provide for modifications of calculations and computations when new data are received. For example, if data indicating a change of parental income are received, they can be entered today, and immediately a new parental contribution would be calculated and the need changed. In a batch system, information is accumulated for some period of time (a day, a week, a month) and entered into the system at the end of the cycle in a batch. Modifications to calculations and computations can be made in a batch system as well as in an on-line system. In a batch system, however, no transactions are actually processed by the system until the whole batch of information is entered. Parental contribution in the example above would not be modified when the data were first available, but rather at the end of the processing cycle in which that batch of data was processed.

The on-line or batch decision is one of the most difficult to resolve. The requirements of an aid system reveal a need for the best features of both processing modes. The sheer volume of data to process at peak periods and the need for explicit control over the accuracy of data entry speak for batch processing. On the other hand, the size of the student file, the small probability that in any one cycle a given record will be accessed, and the not infrequent need to make a change and see it reflected immediately speak for on-line processing. The ideal solution meets the individual institution's needs for speed of processing, guarantees of accuracy, and cost. Teleprocessing equipment is expensive, and, generally, the typical economies of systems are best realized through batch processing.

Package versus In-House Development

Data processing systems can be built or bought. The last few years have seen a major proliferation of extrainstitutional sources offering to provide financial aid data processing systems. A number of good arguments speak strongly for the acquisition of a package developed by an outside agency. Foremost among these is cost. Even the most rudimentary financial aid data processing systems would require at least one person per year of developmental effort. The same amount of money might be directed toward the purchase of a much more advanced system from a commercial vendor.

Another consideration is the flexibility gained from a packaged system that has been designed to adapt to different

environments at a wide variety of institutions. Externally developed systems generally have very sophisticated retrieval capabilities, which will facilitate reporting and research. This characteristic, although it is achieved at some cost in operating efficiency, makes it easier for the institution to modify systems to conform with changing requirements.

Finally, the administrator should consider the ability of the externally developed system to interface with other data processing systems already in place at the institution. Some vendors make available integrated systems that can be purchased in modules as applications are needed in particular offices at the institution. The ability to provide these interfaces may outweigh other considerations in deciding which external vendor to select.

Basically two types of packages are now available. Commercial vendors have systems that cost typically above $25,000 for the basic components with additional charges for such features as packaging or loan servicing. Commercial vendors are generally willing to tailor their products to specific requirements, but the cost, seen or unseen, is borne by the user. The second source of systems is other postsecondary institutions. Such packages are generally described in the annual publications of the College and University Machine Records Conference (CUMREC) and sometimes are obtainable through the facilities of groups like CAUSE. There is a nominal fee (in the range of $1,000 to $7,000). Although not distributed through CAUSE, the Packaging Aid Resources System (PARS), the Institutional Need Analysis System (INAS), and the Financial Aid Transcript System (FATS), developed by the College Board, are available in these same price ranges.

A system developed in the house by the institution's personnel will clearly apply more directly to the financial aid office's specific needs and activities. An in-house system probably requires the least change in the aid structure itself, because it develops around the previous manual environment. An in-house system also is more readily maintainable because it is programmed by staff members familiar with the institution's data processing equipment, procedures, and documentation standards. It probably takes longer to develop an in-house system than to purchase a full-blown external system, but that slow developmental time permits a more gradual and less disruptive implementation of the system.

Planning Guidelines

The planning process described in Chapter 1 identifies for the institution the "ideal" financial aid data processing system and the steps needed to move toward that system. The process, however, is constructed in the absence of the real considerations of time and money. The development of an actual plan requires that those considerations be included, as described in the following guidelines:

I. Compare the ideal system with what is available.
   - A. What have other institutions done? What systems are described in professional journals? In the proceedings of meetings like the College and University Machine Records Conference?
   - B. What systems do other institutions have that your office might adopt? Have other local institutions developed systems they would share? What do other institutions in the same segment do? What systems are available from CAUSE? (Is your institution a member of CAUSE?) Could those systems be implemented on your equipment? Do they meet your needs? Are they flexible enough to be transportable?
   - C. What systems do noninstitutional vendors make available? Do they do all the things that need to be done in your office? Who else is using them? What do the other users say about the quality of the system? About the support available from the vendor after sales? About the maintenance and updating of the system from year to year? Have any other offices at the institution dealt with them in the past? What was their experience?
   - D. Could another's system be implemented at your institution? What would it cost to buy, lease, or borrow a system? Does the institution have the equipment needed? Could it get it? What is the state of documentation of the system? Would it interface with other existing institutional systems? Could it be modified? Who would pay for those modifications? Will the other institution or the vendor help with the installations and testing? For how much money? For how long? On campus or long-distance?

II. Determine whether to recommend development of an institutionally specific system or implementation of an externally developed one.

What are the specific advantages of one approach over the other? Which characteristics of the approach chosen are the most important to the institution? To the decision-making process? What is the second-best alternative? What if management elected the second best?

III. Prepare a specific proposal for system development and/or implementation for management review and approval.
   - A. Specifically, what will the system do?
     1. What current manual functions will be automated? Which functions will continue relatively unchanged? What were some functions included in the new system and others that were excluded? Are there plans for subsequent inclusion of all office functions?
     2. How will the system operate? Batch or on-line processing? Mini- or maxi-mainframe? Central or distributed processing? Through campus facilities or through a service bureau?
     3. How will the system interface with other manual or automated systems at the insitution? Outside the institution? Have the internal and external interfaces been discussed with people from the offices and agencies affected? Have they signed off or must they still be convinced?
     4. What security will be developed? How will the confidentiality of student information be assured? How will unauthorized use be controlled? What backup systems will be used?
   - B. What resources must be committed?
     1. What personnel will be required? To build the system? To implement it? To operate it? Can development, implementation, and operation be performed with existing personnel? If so, will they need new skills or retraining? If not, what will be done with them? How

long will it take to train current or new personnel? Who will be responsible for training?

2. What kind of equipment will be required? Does the institution have the hardware for the system? If not, can it be procured? How long will it take to get it? What current equipment will be surplus when the new system is operating? What will happen to the surplus equipment?
3. What will it cost? How much personnel time will be required for development? For implementation? For operations? What new forms will have to be developed? How much will they cost? What space will be needed? What space can be given up? How much "machine time" will be required before the system is operational?

C. What problems may be encountered? How can they be overcome? What happens if problems are insurmountable? Can the developmental effort be aborted if necessary? What unavoidable costs would that entail?

IV. Obtain management approval for system development and/or implementation proposal.

Get a commitment for funds. Must people be hired or can existing personnel be assigned? What priority is assigned to the project among the other competing demands at the institution? At the other institution or vendor? When can work begin?

V. If the decision is to build a new system specific to the institution:

A. Finalize systems specifications and design.

1. Develop complete data file layouts. Which data are mandatory? Which are optional? Where will each element come from? How will it be coded? By whom?
2. Prepare a complete description of the process, including flowcharts and decision tables. What is the exact sequence of processing? What will be required at every step? What will happen if a step is missing? Who will make what decisions? When? What happens if they are not made?
3. Develop detailed implementation schedules. What checkpoints will be available for administrative review? For management review? What are the alternative schedules? The absolute deadlines? The abort points?
4. Specify personnel assignments and responsibilities.

B. Design input documents and/or terminal data entry options. When must each be available? Who will design and develop them? What supplies of hard-copy documents must be ordered? From whom? How long will it take to get them? When will they be reviewed and revised? By whom?

C. Design output documents and reports. What will they be? When will they be produced? In what medium? How many copies? Who will get them? Will special paper stock be required? Who will print it? How long will it take to produce? How long will reorders take? What supply should be kept on hand? When will outputs be reviewed and revised? By whom?

D. Develop actual computer programs and manual procedures.

E. Prepare documentation of data processing systems, administrative office procedures, data flows, interfaces, outputs, and all elements of the system. Could you cope if the design team changed jobs? If necessary, could you share the system with colleagues and feel confident that they could implement it? Are you covered?

VI. If the decision is to use an externally developed system:

A. Obtain and carefully review all documentation—computer programs, input and output documents. Does the system live up to its advanced billing? Are all the required office functions accommodated in the system? Can you conform with the data input requirements? Do you understand the outputs? Are they consistent with interface requirements for other internal and external systems?

B. Arrange for a complete demonstration of the system.

1. On the site of a prior installation. Is the other user completely satisfied with the system? What does it do best? What does it do poorly or not at all? What were the problems in installation at the other site? For externally developed systems, what support did the vendor really provide for installation and testing? What modifications did the other installation make to the vendor's system? What changes would they like to have made?
2. At your institution. Will the system really operate on your equipment? Can you play with it to see how it really works? Does it perform the functions you need? Is the documentation consistent with what the system actually does?

C. Complete agreements to obtain or purchase the system.

1. Specify exact costs of initial acquisition, maintenance, periodic updates.
2. Determine exactly what support will be provided from the other institution or vendor. In the initial installation? If problems arise then? If they arise subsequently? What support is included in the acquisition price, what is available for an additional charge, and what is not available?
3. What will happen if the system does not perform to specifications or to expectations?

D. Determine what modifications must be made to conform to local institutional requirements, data availability, interfaces, and so forth.

E. Document local modifications to the system. How will those modifications affect your ability to accept updated or improved releases of the original system? Could you cope if the personnel who make the modifications change jobs? Would you share the modifications with other users and feel confident that they would be able to use them? Are you covered?

Financial aid data processing systems can be, and typically are, very complex. Crucial to the success of any such system, however, is that the institution through its project team carefully study the alternatives. No matter which route is finally chosen, prior planning and effective systems analysis are essential long before any programming begins or any purchase order is signed. It is important that the alternatives be considered, and wise financial aid administrators will make sure that they are aware of all the alternatives before any are closed off.

5. Typical Aid System Modules

Chapter 4 presented a broad overview of a financial aid system and highlighted some of the technical decisions that must be made in defining a design plan. Before proceeding to that stage, however, it is important first to decide what the proposed system should do to support the work of the financial aid office.

The most crucial factor in any financial aid data processing system is not its technical design but, rather, how closely its functions fit the environment in which it works. In administrative settings, data processing systems perform specific functions aimed at improving productivity and service to the organization. For a financial aid office, one key factor in evaluating any proposed systems design is the relative success of that system in dealing with those primary functions of student financial aid described in Chapter 4. An automated financial aid system should encourage the counseling role, assist in application processing, ensure management controls over resources, and provide a framework for reporting requirements.

Every financial aid office differs in the way it handles most of its functional activities; the standardization now customary in some administrative areas like payroll simply does not exist in financial aid. As a result, the data processing system designer will not find a completely reliable guide to help evaluate the manual activities of the financial aid office. One important concern in the design process, therefore, should be an objective evaluation of the way things are done, because it is highly probable that the traditional manual approaches to certain activities may not be effective in an automated office.

This problem is aggravated by two issues. The first is traditionally found in new data processing applications—namely, resistance to change in the area being automated. It is best addressed by typical methods: careful planning, full involvement of staff personnel, and continued reassurance about the ultimate usefulness of the final product. The second issue is not so easily recognized because it relates to the position of the financial aid office on campus and off. Figure 7 shows the complex relationship between the financial aid office and its "world." These myriad links all speak to communication paths that must be followed by any automated system. Because the financial aid office does not exist in a vacuum, its system must be able to accept input from many sources as well as provide information to many users.

Certainly it is impossible, given the unique characteristics and responsibilities of most aid offices, to specify the exact complement of functions a data processing system must perform if it is to prove effective. Most systems, however, address a series of problems common to student aid operations. It is therefore convenient to break a system into functional components or modules to describe these features. It should be remembered, however, that from a systems standpoint these modules overlap, and it is unlikely that each of them would be developed as an organic whole. They will probably draw from common data files and share actual software. The user, however, relates better to modules than to programs because the modules compare more favorably with actual activities. The list of modules below is by no means exhaustive, but it does encompass the most typical financial aid activities.

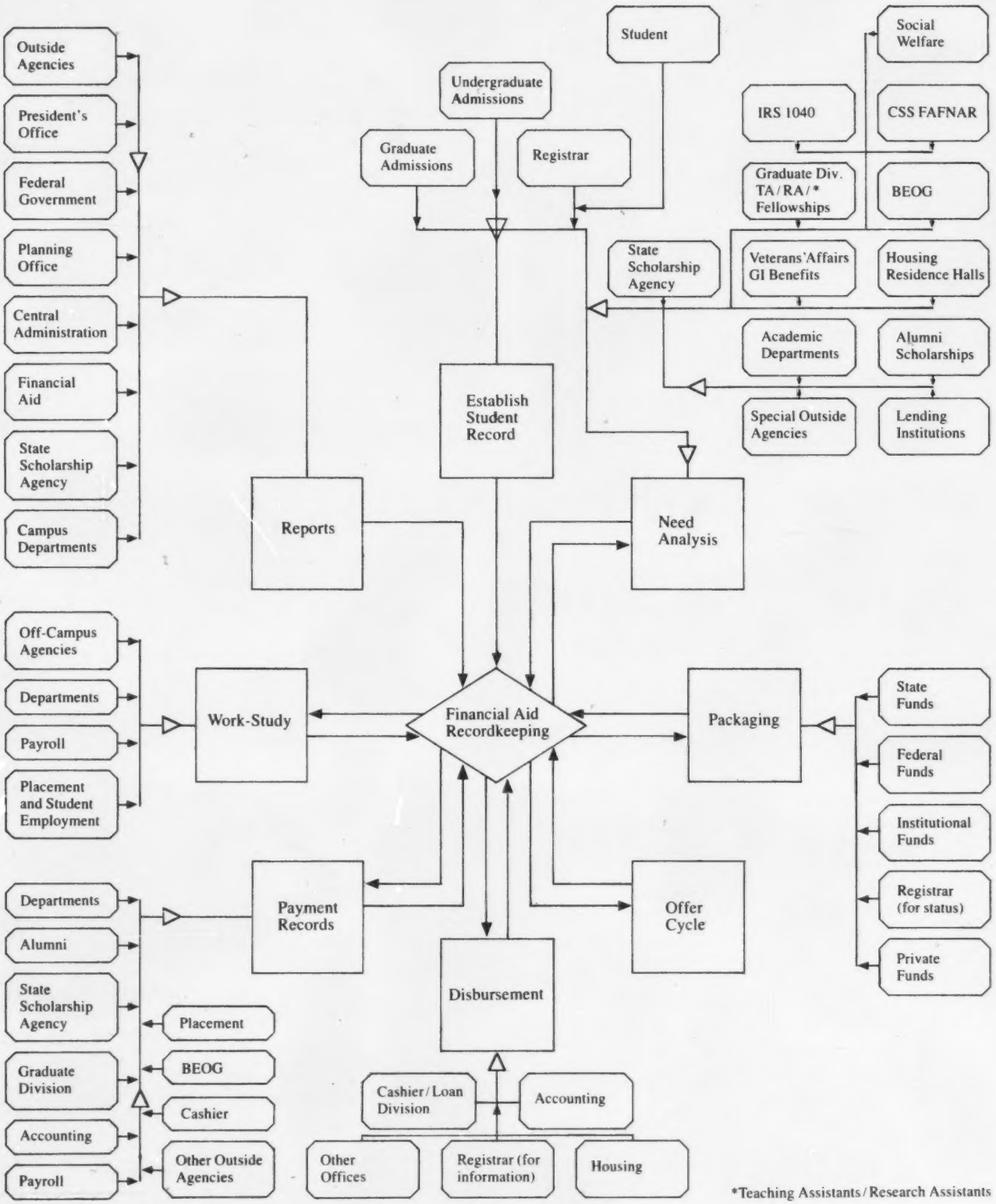
Application Tracking

For all intents and purposes, financial aid is awarded in response to a specific application, which, in its most elementary form, consists of an institutional application form and a need analysis document like the Financial Aid Form (FAF). These two components are matched by the financial aid office staff to complete an application for review and decision.

Although this process is fundamental to the aid office cycle, it is, unfortunately, never quite so simple in its execution. Part of the difficulty arises from the increasing complexity of the application's components. Many institutions now require extensive backup material in addition to the application and the FAF—copies of student and parent federal or state income tax returns, current Student Eligibility Report (SER) from the Basic Grant program, a notification document from a state scholarship program, verification of social service benefits, and a transcript of all aid received at any institution previously attended. For entering students, information about the admissions decision may be required. For continuing students, data about prior years' academic achievement and course completion are necessary. Taken together, these requirements result in a somewhat more complicated process, as shown in Figure 8.

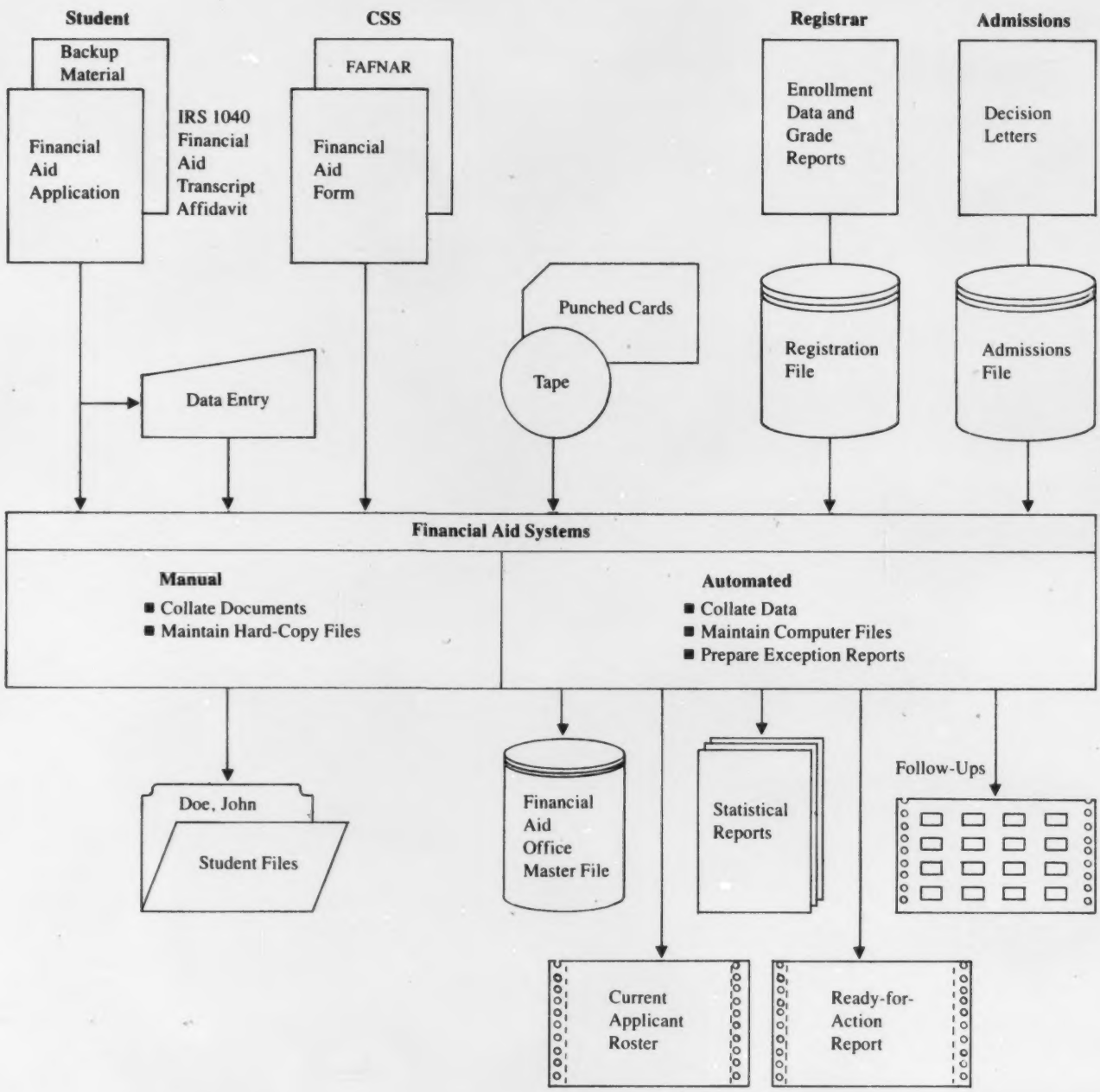
From the data processing perspective, one of the problems in the complex application tracking process is that the components of a complete application come from a variety of sources according to disparate and, generally speaking, unpredictable time schedules. In institutions with any kind of application

Figure 7. Interrelationships of the Financial Aid Office



*Teaching Assistants/Research Assistants

Figure 8. Application Tracking Module



volume, this situation poses a serious logistical roadblock because files must constantly be reviewed to determine which applications are complete and which lack certain documents. The need for access to paper files is made more of a problem by the constant stream of student inquiries about the status of an application. Persons answering student questions and staff trying to file materials interfere with each other.

Almost any automated system should be able to improve this activity. Computers provide an easy method of collecting various pieces of information and then collating them into a responsive whole. In the financial aid office the different components of an application become indicators to be maintained with a student's machine record. When any given item is received, this fact is recorded in the student's record, along with receipt data. An algorithm should then be developed to describe the characteristics of a complete application. Each time the file is updated with new information, records can be subjected to this algorithm and the "ready" applications flagged. This process, which is so time-consuming in a manual operation, can be performed on thousands of records in just minutes and therefore represents a considerable time savings. Not only is it more accurate in terms of matching; it also eliminates concern about the sequence in which documents arrive. It no longer makes any difference whether the FAF arrives before the institutional application; the system collates all the data, leaving to the user the responsibility to file, not to decide.

One additional important advantage of this process is that it becomes much easier to follow up on incomplete applications. Because the system knows which items are necessary, it is not difficult to generate exception reports about those applicants who lack one or more application components, followed by letters to the students urging that the missing data be provided promptly.

Despite the advantages of computer matching of application components, two particular problems must be addressed in any systems design. The first is that the actual content of an application will probably not remain constant over any length of time. Financial aid operations, in response to pressure from outside constituencies and because of increased sensitivity to the need for accurate review, tend to change from one year to the next the material required from students. A data processing system should be flexible enough to accommodate such changes without major rewrites. It is often advantageous for the algorithm defining a complete application to be parameter-driven. In many cases the revised definition does not involve new data elements; the importance of certain elements simply changes.

The second problem relates to the multiple sources from which data arrive—the student, the College Scholarship Service, the admissions office, the BEOG Program, the state scholarship agencies, and others. Obviously, this material must be linked by some common identifier so that it can all be matched. Usually this is the student's identification number, typically the social security number. Unfortunately, there are occasional situations in which a student becomes associated with more than one number, or the student fails to provide the identification number on a certain document. If uncorrected, this situation means that a student's application will never become complete. Planning for data processing in the financial aid office must consider, therefore, the problems of generating identification numbers, alternative matching schemes, and the need to delete and reestablish records with ease.

This application information, if it is properly collected and maintained by the computer system, provides several management benefits. First, it allows the system to do all the difficult matching and highlighting of complete or problem applications. Second, it provides a means of scheduling work and batching it so as to retain control over important source documents. Finally, it allows the system to inform the aid office—either on printed reports or by on-line display terminals—of the status of all student applications. A sample of such a hard-copy roster, as used by New York University, is shown in Figure 9. The roster is of great value to those aid office personnel who receive inquiries from students, by telephone or in person, concerning the status of their applications.

One problem that will increase in the future concerns the student whose entire aid comes from an entitlement program for which the financial aid office is only the processor. Such programs include BEOG, state scholarships, and the guaranteed loan program. Although many students receiving assistance through such vehicles are not applicants for institutional aid, they nevertheless file certain forms with the financial aid office; and their interest in the status of those items is as great as, if not greater than, that of the regular institutional applicant. A well-designed system should also be able to track such peripheral applications and provide accurate information about them. This requirement becomes all the more important because these are not completely segregated constituencies, and the student who today is submitting a Basic Grant SER may next week also apply for financial aid through the institution. This problem will be intensified by the escalating demands of external agencies for the institutions to "validate" certain data before releasing any payment.

Need Analysis

A fundamental process in any financial aid office is determining the extent of a student's need for funds. Stated most simply, need is the difference between costs and resources; in reality the equation is complicated by its many components. A data processing system should provide assistance in separating the various items of the need analysis into those that require professional review and those that can be managed automatically. (See Figure 10.)

The first step in the process is to determine costs. Most institutions now follow a practice of using standardized budgets for financial aid. The budget for a student contains a set amount for such items as tuition, room and board, and transportation; these amounts then vary according to certain characteristics of the student. On-campus resident students have a room and board budget consistent with their expenses; off-campus students have budgets typical of such costs; additional laboratory expenses for premed students are reflected in their budgets. Students exhibiting similar characteristics have identical budgets, no matter what the actual spending pattern.

For an aid office the problem with standarized budgets is keeping them sensitive to individual student expenses while preventing them from overwhelming the clerical work load in

constructing unique budgets. In this area a data processing system can be extremely advantageous because most of the characteristics that govern variances in standard budgets are actually data elements that are retained in the student's machine record. A useful systems feature, therefore, is a parameter-driven mechanism by which student budgets can be increased or decreased according to certain formulas.

The second element in the financial need determination is the contribution expected from the student and the family. Usually these determinations are made according to the Uniform Methodology of need analysis developed by the National Task Force on Student Aid Problems. The methodology has separate calculation routines for students who are considered dependent on their parents for support and for those who are independent of parental support. Contributions (whether from the student or the parent) come from a share of current or anticipated income and a share of existing assets.

Most institutions use the services of the College Scholarship Service or the American College Testing Program in the initial determination of expected contribution. Students obtain a need analysis form like the College Scholarship Service's Financial Aid Form and provide personal and parental data. The form is then mailed to a central processing agency for editing; follow-up is conducted for missing or unclear data; and contribution calculations are made. The computed calculations are usually reported directly to the institutions named on the need analysis document by the student. Reports come in hard-copy and, on request, machine-processable documents or tape.

Most institutions require some or all of their aid recipients to submit additional documentation directly to the institution to verify the information they provided to the College Scholarship Service for its initial determination. Usually these are copies of the IRS Form 1040, comparable state documents, W-2 forms, or all of these. Information from these documents is then compared with that of the original submission; where variance is observed, contributions are recalculated.

Recalculations of financial need also occur when student circumstances change. A student who was planning to live on campus moves to an off-campus apartment. A single student acquires a spouse with children. Automobile insurance rates increase or the car breaks down. Parents or spouses lose their jobs. An unexpected medical expense must be met. Any one of a thousand variables in individual student or family financial circumstances may change and require a corresponding change in the need analysis. Changes occur in both elements of the equation—expenses and contributions. An institutional data processing system supporting the financial aid office must be equipped to cope with these changes.

To assist institutions, the College Scholarship Service makes available the Institutional Need Analysis System (INAS), which replicates in an on-campus computing environment the calculations of expected contribution and BEOG index made by the CSS in its central processing (with the exception of the data edits and follow-up procedures). INAS modules have been developed to be integrated with existing institutional data processing systems and procedures, whether batch or online. An annual maintenance agreement is available to provide for updates to the software as the methodology changes.

Because the Uniform Methodology is in the public domain, an institution could develop its own software to replicate processing by a central agency. An institution that undertook development of its own need analysis software, however, then

Figure 9. Inquiry Roster

NEW YORK UNIVERSITY — ** INQUIRY ** ROSTER — PAGE 1
FINANCIAL AID OFFICE
05/03/79 - 013 - 7879

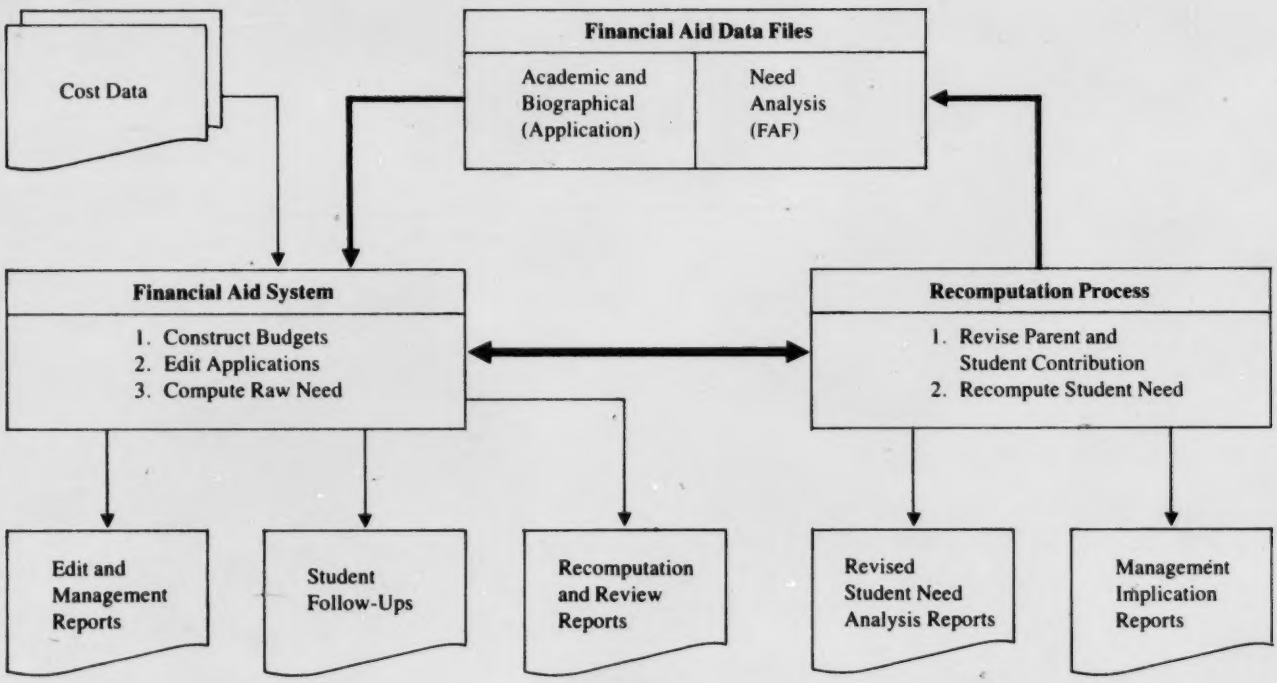
NAME	ID NUMBER	HM ST	SCH	S T U	A R L	A P E S	D M	ADM REF	A P	CSS	CSS DATE	F A T	I R S	AID STATUS	AID STATUS DATE	UNMET NEED	OFFER	ACCPT	B E O G	S E O G	D O G	N C S W L S	G STATE LOAN DATE	F A C	FAC DATE
ABRAHAM, BILL J	012345678	NY	BPA							T	03/22			CSS	03/22				E						
ADOM, DENIS X	012345678		GPA																				C	09/09	
ALLEYNE, MADELEINE	012345678	NY	GRA						Y	T	08/05			ACCEPTD	03/22	720	1250	1250		Y			C	03/21	1 02/04
ALVAREZ, JESUS X	012345678	NY	CAS	F		C	P	NYUS	Y	T	06/21			ACCEPTD	09/06	24-	3600	3600	E	Y					3 08/31
AMAKER, EDWARD X.	012345678	NY	EDU	U	P	D			Y	T	04/16			ACCEPTD	10/27	1421	3650	3650	A		Y	Y	C	06/15	2 06/23
ANDERSON, HANS C.	012345678	NY	GPA	G	P	D			Y	T	05/17			DENIEDN	07/05	3636-									
ANDRIOLO, FIORELLO	012345678	NY	CAS											AWARDED	10/04	3775	250								1 10/04
ARNES, JAMES	012345678	NY	CAS	U	P	D			Y	T	06/13			DENIEDA	06/13	5543			E						
BACON, BRING HOME THE	012345678	NY	CAS							T	05/17			CSS	05/18				E						
BAEZ, JOAN	012345678	NY	GSW	G						T	04/28			AWARDED	09/12	6198	3000		E	Y					
BALSKY, ALICIA B.	012345678	NY	GRA						Y	T	04/16			ACCEPTD	06/23	609-	1250	1250		Y					
BANDEL, REBECCA	012345678	NY	SCE							F	T 07/27			CSS	07/27								C	08/10	
BANKS, ELIZABETH	012345678	NY	SOA	F		C		COLL	Y	P	T 06/18			REVISED	07/21	100-	2711	2900	A	Y					3 07/21
BAREDES, MERCEDES	012345678	NY	BPA	U	P	C			Y	T	04/28			ACCEPTD	08/17	1417	680	680	E						2 08/04
BARNES, XAVIERA	012345678	NY	EDU	U	P	C				T	05/17			AWARDED	09/12		870		A						1 08/04
BAUCH, NATHANIEL X.	012345678	NY	GRA						Y					ACCEPTD	08/29	8490-	2140	1440		Y					
BELL, ALEXANDER G.	012345678	NY	GBA							T	08/05			CSS	08/05								C	09/22	
BERLIN, IRVING	012345678	NY	LAW																				C	02/17	
BERTHOMAS, MAXWELL	012345678	NY	BPA	F			A	COLL	Y	T	04/18			INCMPLT	05/19	425			E						
BETANCOURT, MERCEDES	012345678	NY	CAS	F		C			Y	P	T 05/20			REVISED	12/01	2265			E						2 12/01

Student Identification Data

Application Data

Award Notification Data

Figure 10. Need Analysis Module



would need to apply to the Commissioner of Education for approval of the results if they were to be used for the determination of need for campus-based federal student aid programs. Provision would also have to be made for annual updating if it were to remain consistent with the Uniform Methodology as implemented by the national need analysis agencies.

There are several other ways in which a data processing system can be of assistance. The system can be designed to accept one of the machine-readable reporting systems offered along with the need analysis document. The CSS, for example, offers institutions a choice of both punched cards and magnetic tape in addition to the paper FAF and analysis report. Institutions choosing the magnetic tape record receive all the originally keyed FAF data as well as the detailed results of the uniform methodology computation. The institution thus has access to almost all FAF-type data in a form that can easily be manipulated.

In its simplest form this data can be used to produce a counselor work sheet that combines need analysis data with information from the student's record of academics and prior aid history. This device allows the counselor to focus attention on a summary of the student's record as well as preliminary computation of need. This work sheet may, as the New York University sample in Figure 11 shows, be used as a coding document for corrections; it might then be called a turnaround document.

For institutions employing the FAF reporting tape, another possible use of an automated financial aid system is in extensive editing of the reported data. Although the CSS already highlights for participating institutions a number of unusual conditions, access to the complete FAF information allows the

institution to develop more of its own data. For example, the financial aid staff at a given institution might wish to set certain expectations concerning interest income, or to flag records of self-supporting students who do not demonstrate a minimum level of resources. Such tests can be programmed, and the result can be used to set indicators on the actual student record that would be guides to further review.

The most advanced use of the FAF reporting tape mechanism would involve the validation of the FAF data against other current and historical information in the student's record. For example, the current year's parental contribution could be checked against the prior year's contribution, and records with substantial variances could be tagged. Records of students attempting to establish self-supporting status in the current application cycle could be flagged. The FAF-reported income could be compared with actual data from the IRS 1040 received by the office. The result of this process would be to tag specifically those records that require extensive review and to highlight the precise circumstances that require attention. If this process is well designed and executed, it should allow the aid office to expedite the processing of those records that are completely consistent, according them only a minimal check for accuracy, and to devote most of its time to those applications that require careful review. This process has the potential to reduce the time spent in reviewing applications in total and to increase the time available for problem cases.

A final area of resource analysis is the determination of the expected amounts of noninstitutional aid—in particular, BEOG and the appropriate state scholarships. Both processes are facilitated by a computer system with access to the standard need analysis data, like the FAF punched card or reporting tape. The BEOG index, reported in both places, can be used to devise a simple algorithm to extract an expected Basic Grant award. As the Multiple Data Entry process continues to improve, institutions can place increasing confidence in BEOG estimates

Figure 11. Counselor Work Sheet

```
 7980  105-58-4770 (1-NF)                                                    FMS3100 - 029  09/24/79

STUDENT        SALLY      S                 INC: 14039 <25> |_____|  TAP        ESTIMATE $1620 <34>  |____|_|

HOME:  33 MOCKINGBIRD LN                    PC:      20 <28> |_____|  REGENTS              $0000 <35>  |____|
<65>   SUBURB                 NY  10473
                                            SAI:      0 <29> |_____|  BEOG INDX             610 <36>  |____|
LOCAL: 14 E. 4TH ST  #302
<65>   NEW YORK               NY  10003     SAC:      0 <30> |____|   BEOG AWD  ESTIMATE $1176 <37>  |____|_|

LOC:  <10> |_| SCH:CAS     <49> |___|     REN:  2300 (<31>) |__0_|   GSL AMT              $0000 <38>  |____|

TYP:1 <01> |_| DEG:03-BA   <51> |__|      SUM:    500 <32> |____|   GSL STATUS                 <40>  |_|

PDE:  <16> |_| MAJ:207     <50> |___|     SLS:      0 <33> |____|   OTHER UNDIS AID      $0000 <39>  |____|

MAR:1 <05> |_| PDG:06/84   <18> |__/__|  BDGT: 6595 <26> |_____|_|  ADM STAT:  ACC - 1          <12> |_|

DEP:2 <04> |_| AES:FT  1   <19> |_|       **************************  ASTAT: 03/14/79 READY      <41>  |_______|
                                          *                        *
SEX:2 <06> |_| HGP:3.30    <13> |___|     * BUDGET        $ 6595   *  FA CERTIFICATE:                <42> |_|
                                          * FAM CON     -   2720   *
CIT:1 <07> |_| STE:4       <47> |_|       * AID RES     -  2796    *  NAD: F 02/19/79
                                          * NEED          $ 1079   *
ETH:4 <09> |_| RPR:N       <48> |_|       * AID OFFER   -     0    *  STIPEND: FL <52>          SP <53> |__/__|
                                          * UNMET NEED    $ 1079   *
RES:3 <03> |_| DOB:081461  <08> |_____|   *                        *  SPEC1 <54> |_________________________|
                                          **************************
REF:  <15> |_| SVN:54/53   <14> |__/__|   APL DATE: 02/19/79          SPEC2 <55> |_________________________|

<<<<<------------- FINANCIAL AID AWARDS ----------------->>>>>   <<<-----FALL----->>>  <<<----SPRING---->>>
      OFFER ACCEPT   FUND NUMBER  TYP R      FUND NAME              T+F    R+B    STIP   T+F    R+B    STIP

<901> |____||____|  0-501-100-149 U22   N D S L                  |_____|_____|_____|_____|_____|_____|
<902> |____||____|  5-201-636-547 U21 Y B E O G                  |_____|_____|_____|_____|_____|_____|
<903> |____||____|  5-201-813-122 U24   C W S P                  |_____|_____|_____|_____|_____|_____|
<904> |____||____|  5-201-637-547 U21   S E O G                  |_____|_____|_____|_____|_____|_____|
<905> |____||____| |_|___|___|___|                                |_____|_____|_____|_____|_____|_____|
<906> |____||____| |_|___|___|___|                                |_____|_____|_____|_____|_____|_____|
<907> |____||____| |_|___|___|___|                                |_____|_____|_____|_____|_____|_____|
<908> |____||____| |_|___|___|___|                                |_____|_____|_____|_____|_____|_____|
```

derived in this way. For some state scholarship programs, where the basic award algorithm is known, the FAF reporting tape will typically provide access to all information required to compute an expected award. Although the quality of this estimate may vary, depending on the state scholarship program's actual application process, the review in the aid office can certainly be speeded by having such estimates generated automatically.

Most financial aid systems combine all this need analysis information in the student record and perform the actual computation. Although the need algorithm varies in its complexity, it should be as detailed as the significant resource data the aid office maintains. For example, if the individual components of total family contribution are maintained in the system, it would be proper for the system itself to compute the total family contribution rather than to have it entered separately. In that way any change in one data element—be it social security benefits or summer savings—will result in an automatic recomputation of need. This important management control should not be overlooked in maintaining the system's data integrity.

Packaging

Few students receive all their financial assistance from a single funding source. Grants, loans, and employment subsidized by federal, state, institutional, and private sources are combined into an aid package that attempts to meet the student's entire financial need (Figure 12). A widely used quotation from the National Task Force on Student Aid Problems describes the packaging process as "one of the points at which the other inequities of the present student aid system can be corrected. . . . where the broad funnel of aid resources comes to its narrowest point and those resources are delivered to students."

The packaging process has three major components: determination of student eligibility for an award from a particular source, determination of the amount of the award to come from that source, and determination of the relationship of that award to other possible or actual awards.

This process has long been central to the professional function of the financial aid administrator and has, until recently, resisted most attempts at effective automation. Packaging matches student eligibility for awards with available resources under the control of tight fiscal and eligibility constraints. The financial aid administrator, working in a traditional role, constructs a package for each student according to the institution's award policy, using the available award funds. The problems are numerous. First, since the entire population cannot be reviewed simultaneously, the aid administrator cannot determine how well various packaging rules will work, whether too little or too much money will be spent, and who will be helped and who will be harmed by a given policy. Second, it is difficult to control "counselor swapping" and deviation from established policy. Third, it is virtually impossible to maximize the use of restricted funds and simultaneously meet deadlines.

Automation in the aid office can provide substantive assistance to this process in several ways. First, the student data file for completed applications, or even last year's applications, can be used to extract summary and detailed statistics concerning student need in various subgroups. This information is vital to discussions leading to aid policy decisions. Second, to the extent that the student's computer record contains descriptive demographic data, it will usually be possible to select from the file subgroups of students who may qualify for particular awards. In some systems this process is self-contained so that the aid administrator can construct eligibility statements for individual funds and thereby produce eligibility statements in both fund and student sequence.

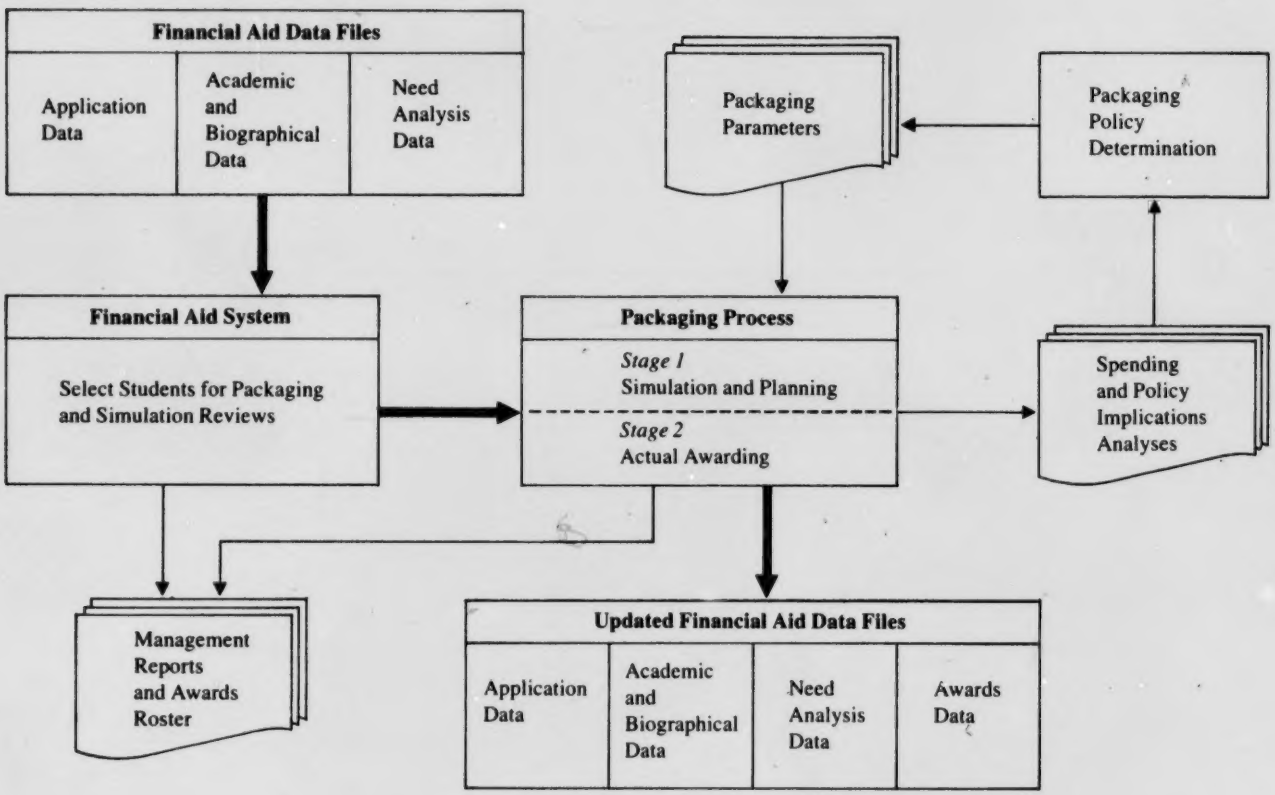
A third approach to this problem is the use of an actual packaging system such as the College Scholarship Service's Packaging Aid Resources System (PARS). Such software generally subjects student cases to a packaging rationale and generates actual packages, using the available funds and the user statements about eligibility and priorities. For example, PARS allows the user to break the applicant pool into 25 groups for packaging and to generate up to 8 awards (from a formula that allows up to 14 funds and alternates), all using up to 99 different fund sources with related selection criteria. This system will operate in a simulation as well as a packaging mode, allowing the user to test various packaging hypotheses before making final decisions.

The output from a packaging system can be used as a guideline for manual packaging (as model packages or as the basis for packaging parameters), or it can be fed back into the main financial aid system as the actual awards. Such a tool greatly expands the aid administrator's control and buys valuable time in the award cycle for review and reflection about the available alternatives. Although some may argue that a packaging system implies the abdication of professional responsibility, others can honestly maintain that it allows the financial aid office to provide consistent treatment to similar cases, to plan the wise use of its resources, and to provide more time for individual review of cases with special circumstances. For more detailed information about the advantages and strengths of a packaging system, the reader should consult the introduction to the *User's Guide to the Packaging Aid Resources System (PARS)*, available from the College Scholarship Service.

An important consideration in the development of a computerized packaging system is the probability that individual student packages will need to be reconstructed several times during the year. Some of the changes will occur because of changes in the circumstances of the student and the family. As described in the previous section on need analysis, there are an infinite number of reasons why student need changes—and every change is potentially mirrored in a change in the student's package.

Most institutions allow students flexibility in accepting or rejecting some elements of the package initially offered. If the student is unwilling to borrow or unable to work, the package will have to be revised to take up the slack of an unaccepted part of the offer. Then, too, during the year student circumstances and preferences change, and aid initially accepted may not be claimed. An anticipated job may fall through, or a raise may make it unnecessary for the student to take a loan. Some of these changes may have a ripple effect, requiring offsetting or compensating changes in other offered aid. The ability to repackage awards to students is an important capability of a

Figure 12. Packaging Module



student aid data processing system. In some cases repackaging would be accomplished with a coding document, as shown in Figure 13. In other situations the financial data system itself may be able to encompass the repackaging methodology.

Award Notification

Because financial aid is in many ways only as successful as its delivery system, the method of communicating decisions to student applicants is extremely important. The system chosen should be timely, informative, and accurate. Anyone who has tried to produce manually typed award notices in a financial aid office will understand the problems inherent in meeting those tests. Certainly, the award notification process should be integrated into any financial aid system, and automation can generally provide effective support (see Figure 14).

The basic problem is quite simple: As student awards are generated for the first time, or subsequently revised, it is important that the student receive notification. This can be in the format of a computer-printed award notice that lists all the awards a student will receive. The example displayed in Figure 15, a sample of one used at New York University, shows another valuable contribution that can easily be made from an automated system. Not only does the award notice display the student's awards; it also resummarizes the need analysis basis used in determining what awards would be made.

When coupled with the properly descriptive information booklet, this letter becomes an important means of information dissemination and student counseling.

The computer-printed award letter can also serve as a turnaround reply form for the student to indicate acceptance or declination of the financial aid awards. This helps to ensure timely and accurate posting of responses to the fund balances. The same reply form can also incorporate the Affidavit of Educational Purpose required of federal aid recipients. A final part of this module might well be a means of following up on those students who do not reply to aid offers within some reasonable time; this helps to return the available funds to circulation as fast as possible.

Some institutions choose to develop a more comprehensive module for the wide variety of special circumstances that require printed notices. Follow-up letters to students, reminders about due dates, and even rejection notices can all be developed in the framework of a parameter-driven letter writer, where the user can specify the population to be addressed and the exact text to be used.

Disbursement and Fiscal Management

If an automated system is to prove useful from a management standpoint, it must address the fact that financial aid involves the disbursement of money from numerous funds and the need for careful monitoring of the funds. (See Figure 16.)

Most systems provide a series of reports about the actual financial aid funds. Summary reports provide data concerning the amounts of aid offered, accepted, or declined, as well as the amounts not yet accepted. Detailed reports describe on a student-by-student basis all the awards from a given fund. These reports are essential to the aid administrator in determining how much to spend and when to spend it, and also in the important exercise of reconciling financial aid records with those of the institution's financial office. An example of de-

Figure 13. Counselor Work Sheet

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 7980  105-58-4770 (1-NF)                                                                    FMS3100 - 029  09/24/79

STUDENT        SALLY      S                  INC: 14039 <25> |_____|  TAP        ACTUAL   $1619 <34>  |____|_|
HOME:  33 MOCKINGBIRD LN                     PC:      20 <28> |_____|  REGENTS              $0000 <35>  |____|
<65>   SUBURB                NY  10473
                                             SAI:      0 <29> |_____|  BEOG INDX             610 <36>  |____|
LOCAL: 14 E. 4TH ST  #302
<65>   NEW YORK              NY  10003       SAC:      0 <30> |____|   BEOG AWD  ACTUAL   $1176 <37>  |____|_|

LOC:  <10> |_| SCH:CAS     <49> |___|      BEN:      0 <31> |____|   GSL AMT             $0000 <38>  |____|
TYP:1 <01> |_| DEG:03-BA   <51> |__|       SUM:    500 <32> |____|   GSL STATUS                <40>  |_|
PDE:  <16> |_| MAJ:207     <50> |___|      SLS:      0 <33> |____|   OTHER UNDIS AID     $0000 <39>  |____|
MAR:1 <05> |_| PDG:06/84   <18> |__/__|   BDGT: 6595 <26> |_____|_|  ADM STAT:  PD  - 2         <12> |_|
DEP:2 <04> |_| AES:FT  1   <19> |_|        **************************  ASTAT: 04/25/79 ACCEPTD  <41>  |_______|
                                            *                        *
SEX:2 <06> |_| HGP:3.30    <13> |___|      * BUDGET        $ 6595  *  FA CERTIFICATE: 09/24/79- #2 <42> |_|
                                            * FAM CON     -   520  *
CIT:1 <07> |_| STE:4       <47> |_|        * AID RES     - 2795   *  NAD: F 09/19/79
                                            * NEED        $ 3280  *
ETH:4 <09> |_| RPR:N       <48> |_|        * AID OFFER   - 3140   *  STIPEND: FL <52> 10/15   SP <53> |__/__|
                                            * UNMET NEED   $  140  *
RES:3 <03> |_| DOB:081461  <08> |_____|    *                        *  SPEC1 <54> |_____________________________|
                                            **************************
REF:  <15> |_| SVM:54/53   <14> |__/__|    APL DATE: 02/19/79          SPEC2 <55> |_____________________________|

<<<<<------------- FINANCIAL AID AWARDS ----------->>>>>   <<<-----FALL----->>>  <<<----SPRING---->>>
     OFFER ACCEPT   FUND NUMBER  TYP R      FUND NAME          T+F    R+B   STIP   T+F    R+B   STIP
                                                                 0
<901> 1390  1390   0-501-100-149 U22  N D S L                |_625_|_____|_____|_____|_____|_____|
<902> 1176  1176   5-201-636-547 U21 Y B E O G - ACTUAL      |_____|_____|_588_|_588_|_____|_____|
<903> 1390  1390   5-201-813-122 U24  C W S P                |_____|_____|_____|_____|_____|_____|
<904> |____||____| 5-201-637-547 U21  S E O G                |_____|_____|_____|_____|_____|_____|
<905> 1890  1890   2-199-561-CAS A11  WSUC SCHOLARSHIP       |_945_|_____|_____|_945_|_____|_____|
<906> |____||____| |_|___|___|___|                            |_____|_____|_____|_____|_____|_____|
<907> |____||____| |_|___|___|___|                            |_____|_____|_____|_____|_____|_____|
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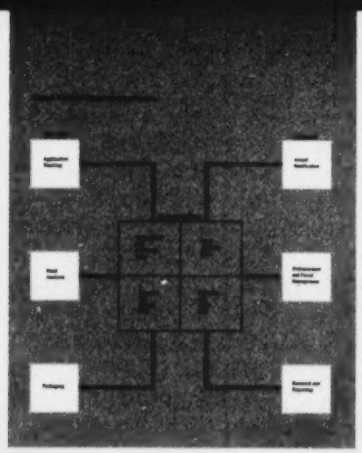
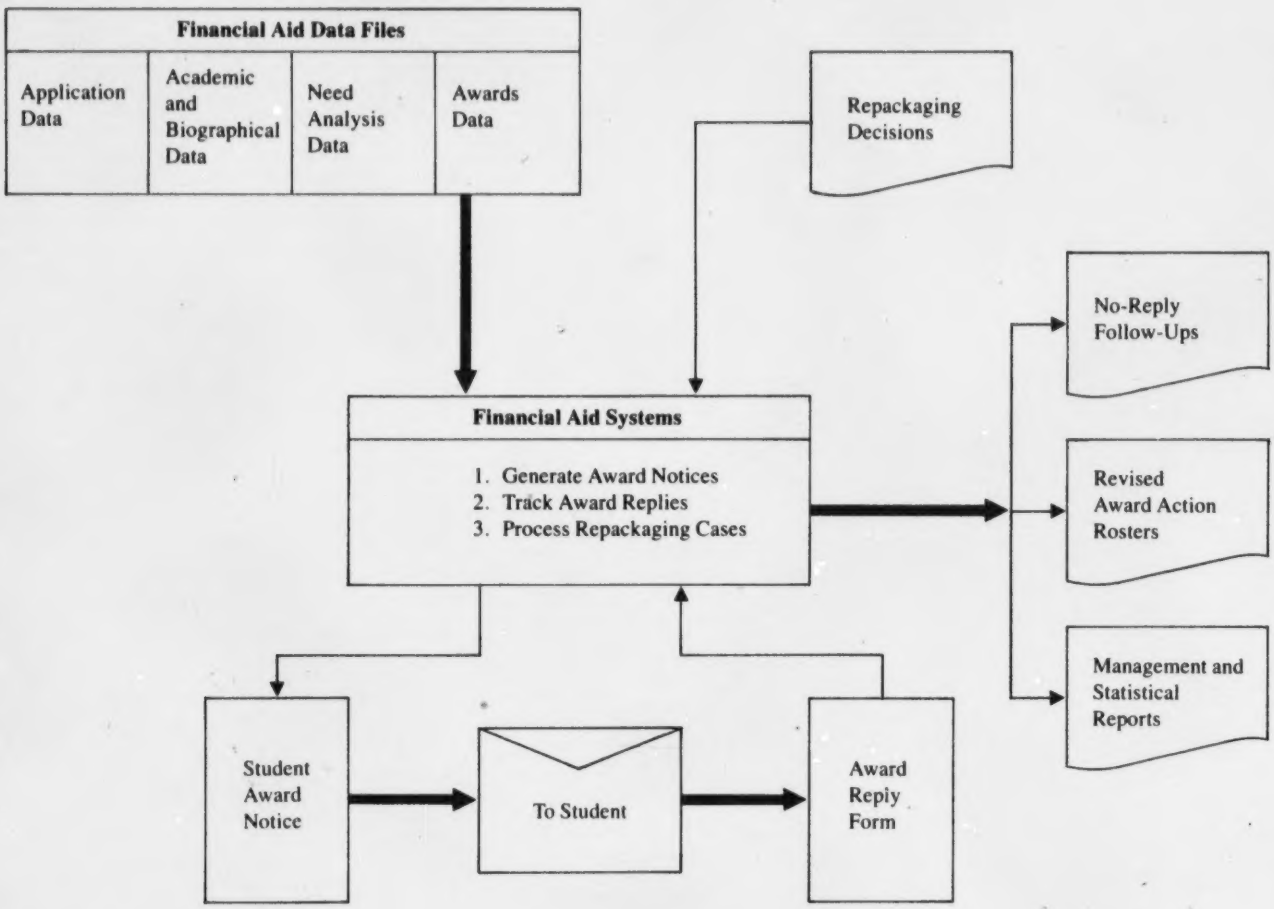


Figure 14. Award Notification Module



tailed and summary reports is shown in Figure 17. A properly functioning system into which data are entered on a timely and accurate basis will prove a real asset to the financial aid administrator, for whom monthly institutional accounting reports are never accurate enough for such important decisions.

Another aspect of fiscal control, aside from the monitoring of fund balances, concerns the prevention of overawards and the tracking of students who never enroll, who drop below unit-minimum requirements, or who drop out of school completely after the term begins. In a manual operation, overawards (that is, offers that exceed calculated need) have to be examined individually following each award period. This tedious process often takes until the end of an academic period to complete, and even then it is frequently inaccurate because of last-minute notifications of external awards not included in the original packages (like state scholarships).

In an automated system, where need is consistently recal-

culated each time a relevant data element changes, an overawards listing becomes an easy report that can be run as often as required. An equally important entry in the overaward review is an interface with the payroll system so that student earnings may be monitored, and unauthorized or excessive employment can be detected.

The same is true of the problems caused by students who drop out, drop below the minimum number of units, or who never enroll. In a manual operation the identification of such cases depends on notices from the bursar or the registrar, and it is almost never possible to follow up on these students in time to make effective use of any reclaimed money. A financial aid data processing system, however, can be tightly interfaced with the registration and business office systems and can thereby highlight such cases immediately and permit prompt, corrective action. (See Figure 18.)

Perhaps the most important aspect of fiscal management is the disbursement of the financial aid awards. Although it seems inevitable that each institution will have its own unique method of billing and collecting revenues, the interface from financial aid to a student's account is crucial. In an ideal environment the financial aid system automatically determines which students have satisfied the test for disbursement (for example, acceptance of awards and receipt of affidavit) and passes to the student accounts billing/receivable system the student's actual awards and disbursement schedule. This design frees financial aid personnel from the time-consuming and error-prone preparation of ledger sheets and ensures timely, accurate bills. A further refinement of this process posts, to a student's billing record, credit memo entries for financial aid that is still pending but expected—for example, a state scholarship. Few institutions have actually solved the problems inherent in this process, but any institution developing a financial aid system should not overlook the potential benefits of extensive analysis

Figure 15. Award Notice

NEW YORK UNIVERSITY
OFFICE OF FINANCIAL AID

Financial Aid Award Statement

ACADEMIC YEAR: 1979-80

NAME AND ADDRESS:
SALLY S STUDENT
33 MUCKINGBIRD LN
SUBURB NY 10473

SCHOOL: WSUC
STUDENT TYPE: FRESHMAN
SOCIAL SECURITY NO. (I.D. NO.): 105-58-4770
AWARD DATE: 09/24/79
REPLY DATE: 10/09/79

WE ARE PLEASED TO INFORM YOU ABOUT THE FOLLOWING FINANCIAL AID AWARDS:

AWARDS	ACCOUNT NO	$ AMOUNTS FALL	SPRING	TOTAL
NATL DIR STU LOAN **				1250
BASIC ED OPTY GRANT (EXTERNAL)		588	588	1176
WSUC SCHOLARSHIP **		945	945	1890
TOTALS ▶		1533	1533	4316

YOU NEED NOT HAVE THE AFFIDAVIT (ON THE REPLY COPY) NOTARIZED

AWARDS MARKED WITH "**" ARE ADMINISTERED BY NYU; THEY TOTAL $ 3140

IF APPROPRIATE, THESE AWARDS ARE BASED ON THE FOLLOWING ANALYSIS OF YOUR RESOURCES:

<<<------ FAMILY RESOURCES ------>>>		<<<--- EXTERNAL FINANCIAL AID --->>>	
PARENTAL CONTRIBUTION	$ 20	ACTUAL BASIC GRANT (BEOG)	$ 1176
STUDENT TERM-TIME EARNINGS	0	ACTUAL NY STATE T.A.P.	1619
STUDENT ASSET CONTRIBUTION	0	REGENTS COLLEGE SCHOLARSHIP	0
STUDENT BENEFITS	0	OTHER OUTSIDE AID	0
EXPECTED SUMMER SAVINGS	500	STATE LOAN (GSL)	0
TOTAL FAMILY CONTRIBUTION	$ 520	TOTAL EXTERNAL AID	$ 2795
		TOTAL RESOURCES ▶	$ 3315

YOUR BUDGET WAS DEVELOPED FROM THE FOLLOWING ASSUMPTIONS:

RESIDENCY STATUS	: COMMUTER
DEPENDENCY STATUS	: DEPENDENT
MARITAL STATUS	: SINGLE
ENROLLMENT STATUS	: FULL-TIME
GRADUATION DATE	: 06/84

SUMMARY OF FINANCIAL NEED & AWARDS

TOTAL ESTIMATED BUDGET	$ 6595
LESS: FAMILY CONTRIBUTION -	520
AND: EXTERNAL AID -	2795
EQUALS FINANCIAL NEED	$ 3280
TOTAL N Y U AID	$ 3140

DIRECTOR OF FINANCIAL AID DATE

READ THE ENCLOSED FINANCIAL AID BROCHURE CLOSELY

TO ACCEPT ALL OR ANY PART OF THIS FINANCIAL AID COMPLETE THE ATTACHED YELLOW REPLY SHEET AND RETURN THE REPLY SHEET TO THIS OFFICE BY THE REPLY DATE LISTED ABOVE. RETAIN THIS COPY FOR YOUR OWN RECORDS. THIS STATEMENT REPLACES ANY PREVIOUS STATEMENT ISSUED BY NEW YORK UNIVERSITY.

STUDENT COPY

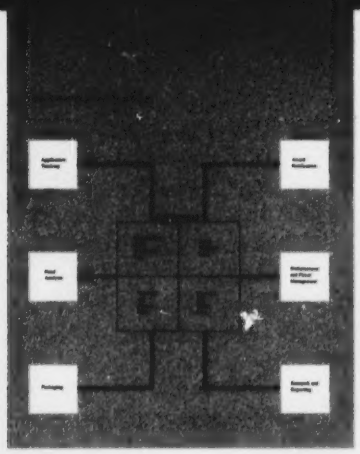
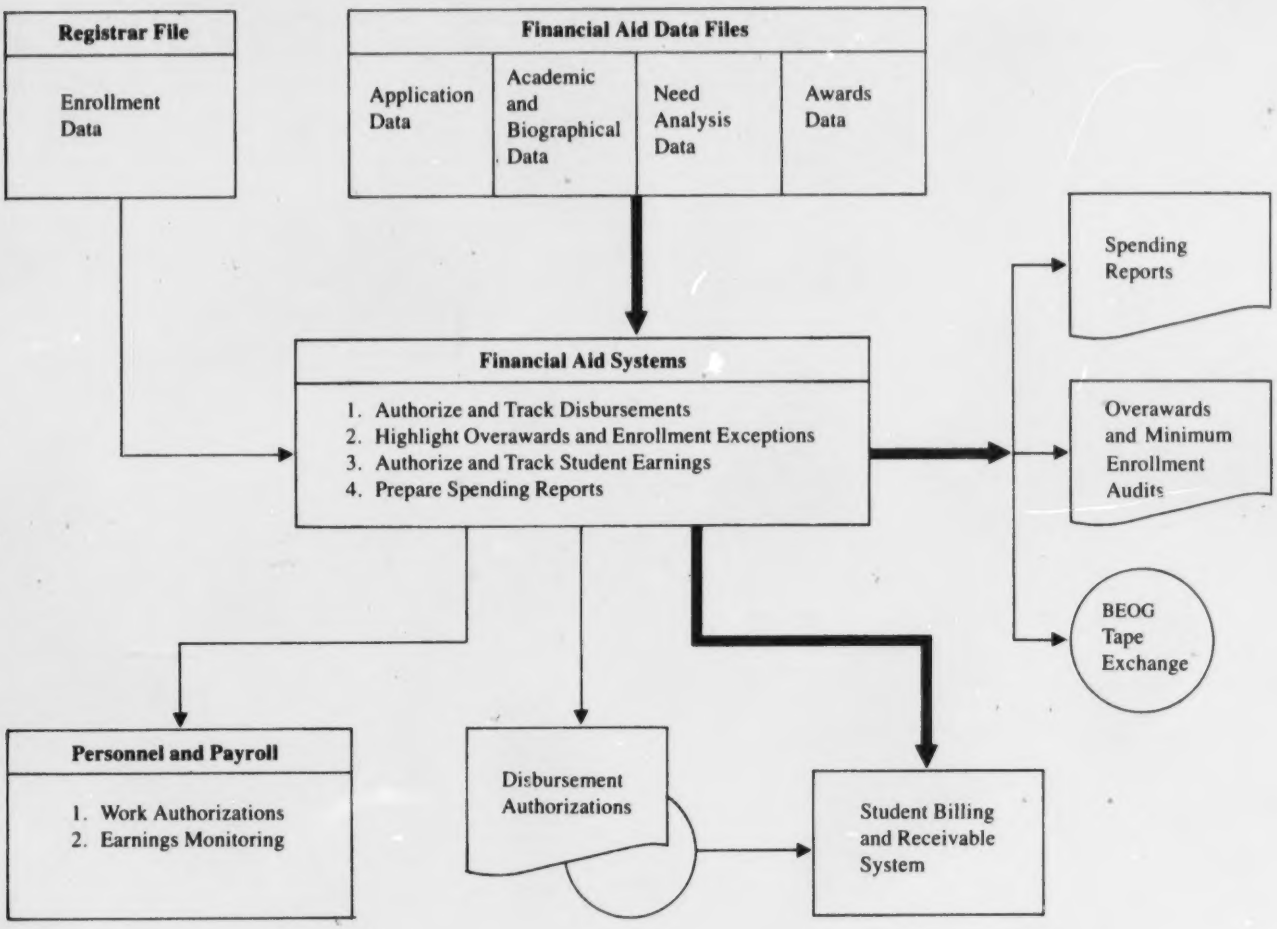


Figure 16. Disbursement and Fiscal Management Module



of the needs in this area. Often this interface is the one link that will make a vital difference in the smoothness of the financial aid operation as well as the student accounts process.

Research and Reporting

The final module (Figure 19) is in some ways the most difficult to describe because it is not a series of regularly executed programs. The usefulness of the financial aid system for research and reporting usually relates to the success of the system in other areas. If the system contains accurate need analysis data, as well as information about student awards, and is properly interfaced with academic systems, it will provide the financial aid office and the institution with an invaluable research and reporting tool.

Some reports result from management concern about the current state of processing: number of applications received and reviewed, number of state loan applications processed, number of award letters generated, amounts unspent in various fund categories. The nature of these reports depends on the

aid administrators, but considerable flexibility should be provided because the need for management reports only increases as the operation becomes more system-driven.

Other reports include the specific data required to complete the Fiscal Operations Report and Application for Funds (FISAP), which is an annual exercise of reporting on the use of federal campus-based monies and requesting new funds for SEOG, NDSL, and CWS for the following year. This report can easily be produced by a financial aid system as long as the base data are accurate; it certainly is an improvement over the effort required to produce the report manually. A sample of such a report is shown in Figure 20. Other HEGIS-type reports can also be programmed and requested when necessary by the financial aid office.

A more important aspect of research and reporting is the ability to generate ad hoc reports and analyses. In this area the adept aid administrator can provide information that would never have been possible without an automated system. In part, the ability for "user-defined" reporting should be built into the system itself. Statistical reports and rosters that relate to parameter-specified populations are typical of most advanced financial aid systems. Just as important, however, is the use an aid administrator can make of such software packages as report generators (for example, *Mark IV, Easytrieve,* or *Data-Analyzer*) or statistical analysis programs (for example, *SPSS* or *SAS*) in generating special analyses or reports. Typically, the financial aid file will have been defined to the software package through some macro-type instruction set, leaving to the user only the need to generate selection and format analysis statements such as those shown in Figure 21. In this context the potential for research is practically limitless because of the extraordinary breadth of data available about student aid applicants through the combination of registrar information and FAF detail contents. The financial aid student master file can easily become an important institutional research asset well worth exploiting.

The list of modules is not exhaustive; rather it sketches the broad range of functional areas within which most financial aid systems exist. At the very least, the automated system must have evaluated the problems for the financial aid office in these areas, even if its impact on the solution of those problems is only slight. There are, of course, other areas in which a system may function—for example, a loan collection subsystem or a student employment reporting subsystem. Such areas are the natural outgrowths of the financial aid office on the particular campus.

Common Problems

Just as functional modules of activity can reasonably be expected to be common to many institutions considering the implementation of data processing systems in support of their

Figure 17. Detailed and Summary Financial Aid Report

DATE: 05/02/79 PAGE: 7

FMS5002

COLLEGE SCHOLARSHIP SERVICE
FINANCIAL AID INFORMATION AND DATA SYSTEM
FUND MASTER FILE STATUS BY FUND NUMBER

NUMBER	NAME	TYPE	RES SW	ACTUAL VALUE	AWARD VALUE	TOTAL ACCEPTED NUMBER	TOTAL OUTSTANDING NUMBER	TOTAL DECLINED TOTAL AVAILABLE
0401658547	KEED SCHOLARSHIP FUND	U33		999	999	0 0	0 0	0 999
0401710547	PRESIDENTIAL SCHLP	U33		71,000	71,000	58,890 19	2,086 2	0 10,624
0456122547	MILDRED RUBIN SCHLP	S22		500,000	500,000	414,790 156	23,790 11	0 61,419

05/03/79 NEW YORK UNIVERSITY FUND STATUS REPORT PAGE 1

FMS3002 - 017 - 7879

STATEMENT OF FUND STATUS

PRESIDENTIAL SCHLP FUND NO. 0401710547

FILE SEQ. NO.	STUDENT NAME	SCH	OFFER DATE	OFFERED	ACCEPTED	AMOUNT OUTSTANDING	AMOUNT DECLINED	DISBURSEMENT SCHEDULE FALL TOT	FALL MOB	FALL STIPEND	SPRING TOT	SPRING MOB	SPRING STIPEND
123456789	AXELROD JULIE	CAS	08/10	3000	3000			1500			1500		
234567890	BUSHROD KEITH	CAS	11/16	3116	2000		1116	1000			1000	1116	
345678901	CARTWHEEL SARAH	CAS	09/05	4050	4050			1975			2075		
4567890l2	DASHBOARD MICHEL	CAS	10/27	3800	3800			1775			1775		
5678901l3	GLOVEBOX ROBYN	CAS	09/05	2700	2700			1350			1350		
6789012l4	GLADSTONE RUTH	CAS	12/13	4450	4450			1325	900		1325	900	
7890123l5	GUNNER SUSAN	CAS	10/25	2235	2235				1117			1118	
8901234l6	HANFORD SOPHIE	CAS	10/27	3150	3150			1575			1575		
9012345l7	INNING JOHN	CAS	09/05	3900	3900			1950			1950		
0123456l8	JACKSON JOSEPH	CAS	01/24	3500	3500			1750			1750		

financial aid operations, some common problems are endemic to the system with which a data processing system must cope. Some of these have been mentioned earlier (for example, the BEOG-only applicant, the need to track NDSL recipients for two decades, the failure of students to earn their SEOG match) as they apply to specific programs. Others that cut across programs but may be sufficiently common to warrant mention are the following:

Multiyear operations. In many institutions aid is offered in the spring of one academic year, disbursed during the following academic year, and "reported" in the fall of the third academic year. For any student, files may need to be maintained for two or more years: a new application file for awards not yet approved, a current application file for aid being disbursed, and a history archive file for previous years' disbursed assistance. The documentation required for each of those files may differ, as may the eligibility criteria, award amounts, and disbursement plans.

No-need applicants. Many students who apply for aid may not demonstrate financial need. Consequently, they will not be packaged by the student aid data processing system. Their records, however, cannot be purged from the system. They may subsequently apply for reconsideration because conditions change; they may receive outside awards or loans. They must be included in statistical reports. Their records have to be available to the aid office personnel with nearly the same ease of access as for awarded students in order to facilitate counseling and guidance activities. This problem will become even more critical with the expansion of access to guaranteed loans provided by the Middle Income Student Assistance Act of 1978.

Entitlement awards. Some states and the federal government make available assistance to which students are entitled regardless of their financial need and often with little regard for their enrollment status. Frequently these are tuition and fee remissions automatically available to children, spouses, or deceased or disabled veterans. The financial aid data processing system must be able to administer these awards even though students may not meet normal eligibility criteria and even though recipients may not be considered for any other assistance.

Two other kinds of problems are frequently cited as impediments to automation in financial aid: change and uncertainty. The recent history of financial aid has adequately demonstrated that nothing is more certain than change. Eligibility requirements vary from year to year; award amounts fluctuate; budgets and student circumstances change four, five, even six times during an academic year. Each year is a cliffhanger waiting for some federal action to authorize or re-

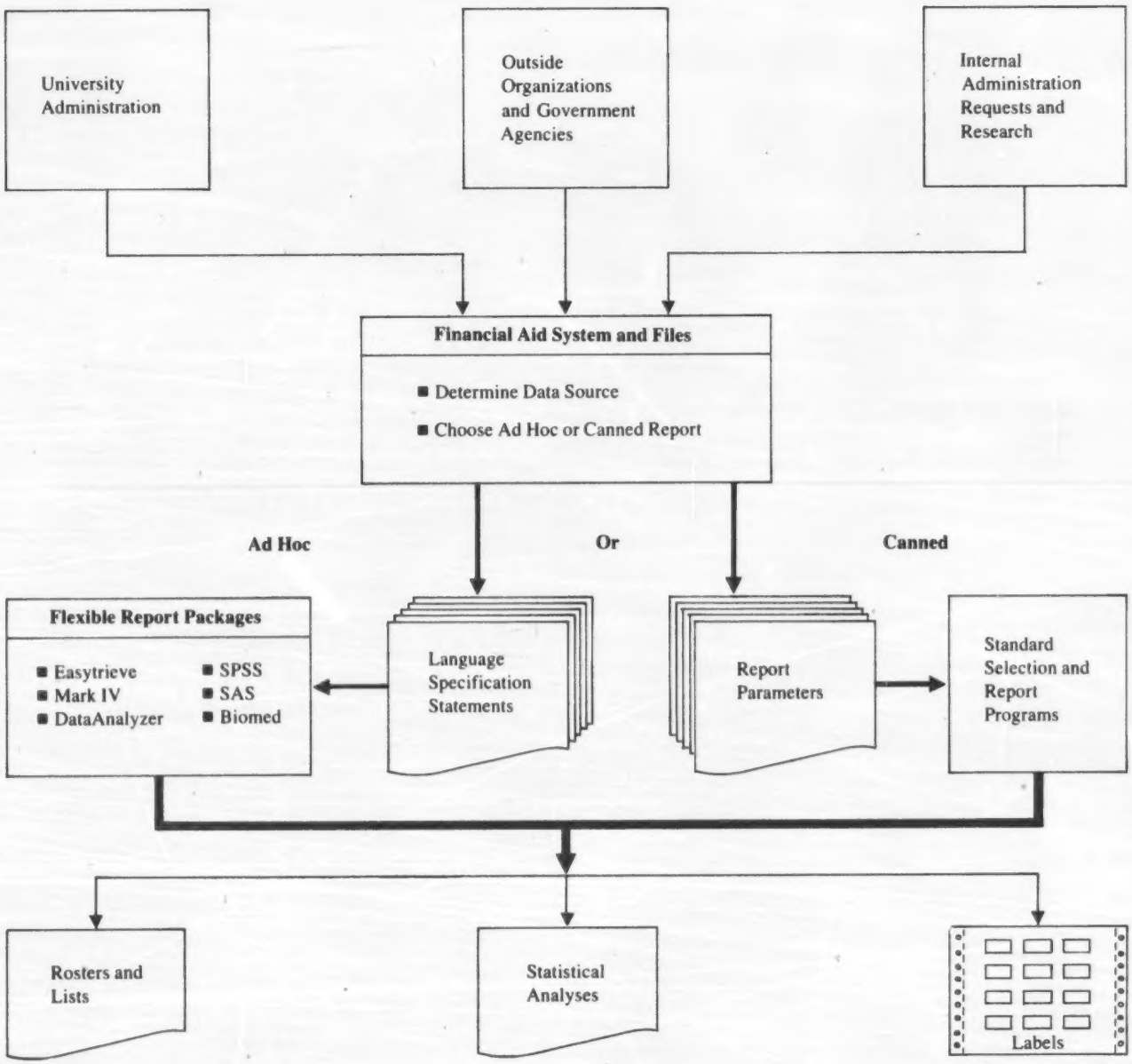
Figure 18. Overawards Roster

DATE 02/04/80 (7980) NEW YORK UNIVERSITY ** OVER-AWARDS ROSTER - UNDG ** PAGE NO. 1

FMS3023 - 004 FINANCIAL AID AWARD ROSTER

STUDENT NAME / HOME ADDRESS	SOC.SEC.NO.	SCH TYPE / PDOG	M A J	AID STAT DT / D R FTPT	FUND NUMBER	FUND NAME	OFFER AMT	ACCEPT AMT	PC SL SUP SAV	LN SUB GSL BEOG	STATE AGNTS CTHER	BUDGET NEED UNMET
BLANK OREN A	800-60-3212	CAS 131		ACCEPTD	0501100149	N D S L	1250	1250	0	0	12504	9215
31 DOWNING STREET #3		NF(1)		08/21/79	5201637547	SEOG-IY	600	600	2037	15605	0	3888
NEW YORK NY 10014		06/83		1 2 FT	2199591FRE	#SUC SCHOL	3000	3000	560	0E	0	562-
BLOUNT CAPTAIN M	800-56-4856	EDU 250		ACCEPTD	0501100149	N D S L	310	310	3640	1200	5884	6595
4082 SETON AVENUE		NT(2)		07/03/79	2199550TRF	SEMNAP SCH	1220	1220	376	12006	250	1141
BRONX NY 10466		06/82		2 3 FT					600	UA	0	385-
BONACKER MARBELL X	800-60-5551	CAS 266		ACCEPTD	0501100149	N D S L	830	830	4420	0	0E	6595
305 WEST 25TH STREET 9B		NF(1)		10/19/79	5201813122	C W S P	600	800	1	0	250	1424
NEW YORK NY 10001		06/83		2 3 FT	2199591MAT	NYU MATCHI	250	250	560	0E	0	456-
BOUBOULIS JEAN-PAUL	800-56-8910	CAS 041		ACCEPTD	0501100149	N D S L	1250	1250	1434	0	0	7720
12 ARCHUNG ROAD		NF(1)		04/18/79	5201637547	SEOG-IY	600	600	66	10406	0	4760
WAYNE NJ 07470		06/83		2 1 FT	5201813122	C W S P	900	900	560	UA	0	956-
					2199591FRE	#SUC SCHOL	3000	3000				
BRANDENBURG GATE	800-52-9081	CAS 131		ACCEPTD	0501100149	N D S L	650	650	2295	0	14004	7020
400 WASHINGTON AVENUE		NT(2)		07/24/79	5201637547	SEOG-IY	600	600	20	0	250	2405
BELLMORE NY 11710		06/81		2 3 FT	2199591TRF	#SUC SCHOL	2000	2000	700	0E	0	845-
BROOKS ALBERT	800-50-4598	BPA 089		ACCEPTD	0501100149	N D S L	400	400	230	0	1770A	6595
1563 85TH STREET		NF(1)		09/25/79		BEOG -0340	1476	1476	3	0	250	2366
BROOKLYN NY 11228		06/83		2 3 FT	2199561FRE	CBPA SCHOL	2200	2200	500	1476A	0	234-
CABALLERO MERCEDES M	800-60-7726	BPA 001		ACCEPTD	0501100149	N D S L	1250	1250	1235	0	856A	9080
1466 PRIMROSE CURVE		NT(2)		08/21/79	5201637547	SEOG-IY	600	600	157	45605	0	2514
ROSEVILLE MN 55113		06/82		2 2 FT	5201813122	C W S P	1600	1600	600	736A	0	534-
						BEOG -1025	776	776				
CALVIN JOHN	800-56-4900	CAS 215		ACCEPTD	0501100149	N D S L	700	700	0	0	16004	3456
56-51 WALDRON ST		NT(2)		09/05/79	5201637547	SEOG-IY	600	600	0	12506	0	1178-
CORONA NY 11368		06/81		2 3 FT		BEOG -0887	926	926	700	926A	0	4678-
					2199591TRF	#SUC SCHOL	2200	2200				
CASSIDY MUPALONG G	800-40-9352	CAS 194		AWARDED	0501100149	N D S L	1250	1250	0	600	0	9215
11 COURT STREET		NT(2)		10/02/79	5201637547	SEOG-IY	600	600	0	9396	0	6436
BRANFORD CT 06405		02/82		1 2 FT	5201813122	C W S P	1250	1250	600	1860A	0	324-
						BEOG -0000	1800	1800				
					2199591TRF	#SUC SCHOL	3700	3700				
CATAPANO ELIZABETH G	800-62-8710	CAS		ACCEPTD	0501100149	N D S L	700	700	1951	0	1040A	6595
8645 23 AVE		NF(1)		08/15/79	5201637547	SEOG-IY	600	600	0	0	0	3684
BROOKLYN NY 11214		06/83		2 3 FT	2199591FRE	#SUC SCHOL	2050	2050	560	0E	0	266-

Figure 19. Research and Reporting Module



authorize programs, pass appropriations, approve schedules. But rather than reasons for not automating a system, they should be considered positive reasons for implementing a system. Data processing systems with carefully constructed master files can respond to changes infinitely faster than can any manual system. Simulation capabilities built into data processing systems can anticipate possible changes and demonstrate the implications of alternative courses of institutional actions. Data processing systems can maintain multiple files that reflect different interest rates, different repayment schedules, different lenders.

While it is true that data processing is not the panacea some aid administrators and senior institutional managers think it is, a well-conceived and carefully implemented data processing system can provide a resource that enables the aid office to cope more effectively with the constant change and uncertainty that characterize its operational environment.

Figure 20. Fiscal Operations

DATE 05/03/79 NEW YORK UNIVERSITY

FMS3060 - 7879 015 ** FISCAL OPERATIONS **

F A I D S STATISTICAL PROFILES

TABLE 37. NUMBERS OF UNDERGRADUATE, GRADUATE AND TYPE UNKNOWN FEDERAL AID RECIPIENTS AND AMOUNTS

PROGRAM	UNDERGRAD INDEPENDENT	GRADUATE	UNKNOWN TYPE	TOTAL TABLES 06 & 07
UNDUPLICATED #	172	6	27	1304
TOTAL AMOUNTS	231063	7935	36275	1490746
A. # SEOG CY	20		9	318
$ SEOG CY	11600		4353	184435
B. # SEOG CY	7		1	119
$ SEOG CY	3800		400	55750
C. # SEOG UNK				2

DATE 05/03/79 NEW YORK UNIVERSITY

FMS3060 - 7879 015 ** FISCAL OPERATIONS **

F A I D S STATISTICAL PROFILES

TABLE 36. NUMBERS OF UNDERGRADUATE DEPENDENT FEDERAL AID RECIPIENTS AND AMOUNT SPENT BY INCOME CATEGORY.

PROGRAM	TOTALS	UNDERGRADUATE DEPENDENT 0- 5999	6000- 11999	12000- 17999	18000- 23999	24000- 29999	30000- OVER	INCOME N.RPTD
UNDUPLICATED #	1099	157	281	296	215	96	51	3
TOTAL AMOUNTS	1215473	153037	298499	354538	238057	110933	58004	2405
A. # SEOG CY	289	35	73	81	65	24	11	
$ SEOG CY	168485	20630	43800	47460	35695	14350	6550	
B. # SEOG CY	111	6	19	53	19	11	3	
$ SEOG CY	51550	2600	8800	25350	8600	4800	1400	
C. # SEOG UNK	2	2						
$ SEOG UNK	1100	1100						
# CWS AWARDS	322	47	88	91	52	26	17	1
CWS AMOUNTS	317041	39717	80785	92069	57610	26730	18980	1150
# NDSL AWARDS	845	131	219	214	159	78	42	2
NDSL AMOUNTS	677297	88990	165114	189659	136152	65053	31074	1255

44

Figure 21: Selection and Format Analysis Statements

These Control Statements:

```
IF     PROC*YEAR NO 7879
FLUNK
IF     NDSL*TFF  GR 0
OR     NDSL*TFS  GR 0
OR     NDSL*RAS  GR 0
OR     NDSL*RAF  GR 0
OR     NDSL*STF  GR 0
OR     NDSL*STS  GR 0
NDSL*F  =  NDSL*TFF + NDSL*RBF + NDSL*STF
NDSL*S  =  NDSL*TFS + NDSL*RBS + NDSL*STS
NDSL*YEAR = NDSL*S + NDSL*F
CONTROL SCHOOL
SORT SCHOOL
TIF.A.I.D.S.  1978-79 PROCESSING YEAR
T2NDSL DISBURSEMENT SUMMARY BY SCHOOL
LIST SCHOOL NDSL*F NDSL*S NDSL*YEAR TALLY 'STUDENTS'
END JOB              *** GENERATED STATEMENT ***
```

Generated this Report:

5/31/79

F.A.I.D.S. 1978-79 PROCESSING YEAR
NDSL DISBURSEMENT SUMMARY BY SCHOOL

SCHOOL	NDSL F	NDSL S	NDSL YEAR	STUDENTS
	138		138	1
BPA	109,583	111,606	221,189	279
CAS	399,926	385,314	785,240	979
DEN	170,487	157,386	327,873	145
EDU	104,622	105,122	209,744	248
FDP	850	850	1,700	1
FRA	625	625	1,250	1
GAG	2,560	3,500	6,060	5
GAL	15,000	26,425	41,425	49
GBA	150,050	129,000	279,050	146
GED	231,450	244,393	475,843	329
GPA	66,865	53,944	120,809	75
GRA	233,343	195,584	428,927	298
GSW	78,250	92,279	170,529	112
LAW	271,823	278,093	549,913	249
PGO	15,320	15,320	30,640	27
PGL	40,320	51,595	91,915	47
SAG	150,675	151,285	301,760	139
SCD	12,770	13,865	26,635	27
SCE		2,000	2,000	2
SOA	153,330	148,450	301,780	300
SPA	105		105	1
USW	21,953	24,844	46,797	45
FINAL T	2,229,842	2,191,476	4,421,318	3,465

3,465 RECORDS TOTALED

Using these SPSS Control Cards and a Constant File Definition:

```
SELECT IF      (CSS EQ 'T' AND DIVISION EQ 1)
CROSSTABS      TABLES=SCHOOL BY NEEDCAT
OPTIONS        5
```

This Report Was Generated:

NEW YORK UNIVERSITY -- ANALYSIS OF AID APPLICANTS 05/03/79 PAGE 5

FILE FASTATS (CREATION DATE = 05/03/79) 1978-79 NYU FINANCIAL AID STATISTICAL FILE

CROSSTABULATION OF SCHOOL BY NEEDCAT RANGES OF FINANCIAL NEED PAGE 1 OF 1

SCHOOL	NEEDCAT	1. $4500 +	2. $3000-$4499	3. $1500-$2999	4. $0-$1499	5. NO NEED	ROW TOTAL
		1.1	2.1	3.1	4.1	5.1	
CAS	1.	348	794	943	225	215	2525
		13.8	31.4	37.3	8.9	8.5	52.2
		41.5	53.0	58.6	52.0	46.5	
EDU	2.	153	224	202	46	66	691
		22.1	32.4	29.2	6.7	9.6	14.3
		18.3	14.9	12.6	10.6	14.3	
BPA	3.	93	238	287	71	80	769
		12.1	30.9	37.3	9.2	10.4	15.9
		11.1	15.9	17.8	16.4	17.3	
SCD	4.	22	35	33	19	19	128
		17.2	27.3	25.8	14.8	14.8	2.6
		2.6	2.3	2.1	4.4	4.1	
SOA	5.	174	163	116	58	62	573
		30.4	28.4	20.2	10.1	10.8	11.8
		20.8	10.9	7.2	13.4	13.4	
GAL	6.	27	19	21	11	13	91
		29.7	20.9	23.1	12.1	14.3	1.9
		3.2	1.3	1.3	2.5	2.8	
USW	7.	21	26	7	3	7	64
		32.8	40.6	10.9	4.7	10.9	1.3
		2.5	1.7	0.4	0.7	1.5	
	COLUMN TOTAL	838	1499	1609	433	462	4841
		17.3	31.0	33.2	8.9	9.5	100.0

6. Typical Interfaces

As the diagram in Figure 7 demonstrates, the financial aid office at a typical college or university does not operate in a vacuum. The relationships of financial aid to other operations within the institution, to state and federal governments, and to private agencies and organizations are both extensive and complex.

It is possible (and has frequently been done) to build and install a data processing system that supports the financial aid operation on the assumption that all input information and all output actions will be processed by and with manual systems. Most institutions, however, find it more efficient to develop automatic interfaces between the aid office data processing systems and those of others with which the office has important and regular relationships. These interfaces can provide a number of important benefits for the institution and the aid office:

Redundant data collection can be eliminated or reduced. If data needed by the aid office can be obtained directly from the files of another office, students and office staff benefit. There are benefits also if the aid office can routinely provide information needed by another office.

Accuracy can be improved. Not only are the problems of clerical intervention and the consequent errors reduced; files can be updated more frequently and more completely if a change reported to one office is automatically transmitted to another.

Processing time can be reduced. Automatic transfers of data can be scheduled and can take place as soon as they are available. It is no longer necessary for data to be prepared in hard copy, physically moved, and clerically entered into the receiving system.

The actual degree and configuration of the interfaces at any given institution depend on several institutionally specific factors. The status of automated systems in other offices naturally will govern. At most institutions the aid office is one of the last to be automated; consequently, most other offices with which the aid staff must interact have computer systems ready to provide and receive data. Another factor concerns the institution's internal policies. At some institutions policies create a close and natural dependence between offices and their data collection and use needs; at others there is no natural relationship on which to develop computer interfaces. Another factor frequently is simply personality. Some administrators are unwilling to deal with "mechanical" systems and have the autonomy and the authority to translate that unwillingness into a refusal to develop interface systems. All these factors require an ongoing evaluation of the reliability of data available from other systems. If other data are not timely and accurate, then the values of "automatic" interfaces will be reduced or eliminated.

Some common and natural relationships between the aid office and others on the campus should be considered, however, in the development and implementation of financial aid office data processing systems.

Admissions Office

At some institutions the application for admission serves also as the application for financial aid. Even though the offices may be physically and administratively separate, students may have the option of checking a box on the admissions application indicating that they wish to be considered for financial aid; that check mark will be sufficient for the students to become actual candidates. At many institutions no consideration is given to an aid application—whether made on the admissions application or separately—until an affirmative decision is made about admissibility.

Regardless of the point at which the interface occurs, students must be successful applicants for admission before they can receive financial aid. So a minimal interface between the admissions and the financial aid offices would involve the transmittal of information about the applied/accepted status of students seeking admission to the institution, as entering first-year students, undergraduate transfers, or graduate or professional applicants who wish to be considered for financial assistance.

The aid office also needs specific information about the previous academic activities of substantially all its applicants. For entering first-year students it may be important to know the high school origin to determine eligibility for PTA and Moms' Club scholarships available only to students graduated from a particular high school. For transfer students, whether undergraduate or graduate, it is generally necessary to initiate communications with all previous schools to determine the amount of aid previously received in certain programs and to ensure that the student is not in default on previous obliga-

tions. Because the admissions office (or the admitting system) has immediate and generally accurate access to records of prior educational activity, inclusion of this data in interfaces with the aid office might be important.

Some student aid programs have selection criteria related to the actual level of past achievement or a prediction of future achievement. Scholarships for valedictorians are not uncommon. If these kinds of student aid programs are available at the institution, it may be relevant to transmit data about prior achievement or the results of future achievement prediction equations to the aid office together with data about the actual admissions status of candidates.

In addition to these specific kinds of information available only through the admissions office system, demographic data included in the application for admission could be used to establish or enrich the student aid master file and to eliminate a second collection of data from the student and a second manual entry of data into the computer system. Obviously, this could happen at those institutions where a check on the admissions application constitutes the aid application. Some lesser level of interface of demographic information could occur at other institutions where there is a formal application for admission that includes data needed for the aid master file.

The aid office can provide to the admissions office information about the actual assistance offered to students. This can be helpful to the admissions office staff as they work with individual students seeking to develop and implement their plans for postsecondary education. In the aggregate it can be useful in developing and interpreting information about the yield of certain groups of students. The admissions office may have received a personal recommendation from an alumnus, a school counselor, or a legislator to whom it may be appropriate to report on the actions the institution took in respect to the student. Information about the aid decision may be an important part of that public relations reporting system.

While not specific to the data processing interface, the aid office should be sure that policies and policy changes are communicated to the admissions (or articulation) office staff. As one of the institution's primary contact points for potential students, this staff's knowledge of the current aid situation can be crucial in advising students seeking entry into the institution. The policy-level interface must not be lost in the technicalities of data transmittal.

Registrar's Office

Once the students are admitted, the registrar files become most important data sources for the aid office. Nearly all financial aid programs require that their recipients enroll for at least some minimum number of courses and maintain some level of satisfactory progress. Data relevant to the measurement of minimum standards of enrollment and satisfactory progress must come from the registrar.

This kind of interface is particularly important at an institution where there are no formal procedures for students who leave without completing their academic programs (or no ways of enforcing compliance with procedures that may exist on paper). Most aid is disbursed to students in payments throughout the academic year. Typically, an initial payment is made at or around the time of registration to pay for tuition, fees, books, supplies, and other initial expenditures. The second installment is not usually made until sufficient time has passed to make certain the student will remain a student. An interface that provides the aid office with enrollment information on the institution's "census data" facilitates disbursals to students who are enrolled and avoids disbursals to students who have prematurely terminated their enrollment.

It is also important for the aid office to be able to monitor the actual completion of courses and the level of student achievement. In some cases a specified level of achievement is required for continuation or renewal of aid. Prompt notification of the courses completed in the fall semester may be required to determine eligibility for aid for the spring semester. The aid office also needs to know which students are nearing the end of their formal educational programs in order to arrange for exit interviews, development of loan repayment schedules, or collection of "skip-trace" information.

Information *from* the aid office may facilitate the task of the registrar. Knowledge that a student will receive financial assistance for the payment of tuition and fees may be important in allowing a student to register without full payment of those charges. Information that a particular job schedule is critical to receipt of work-study aid may be sufficient to permit early registration. And knowledge of which students are currently aid recipients may help the registrar to know where to refer students who say they are leaving the institution—either to help them seek financial aid if they are not recipients or to direct them for exit interviews if they are recipients.

Business Offices

Because so much financial aid activity involves the receipt, disbursal, and collection of money, it is difficult to conceive of a financial aid data processing system that does not include interfaces with the institutional business offices.

A first interface level must come at the recordkeeping and reporting level. The current procedures for requesting funds from the federal government for the new academic year are tied to reporting on the activities of the prior year. The former function typically is of most concern to the aid office; the latter, to the business office. But the wedding of the two processes in the FISAP currently used by the Office of Education develops a commonality of interest that might not have existed in the past.

A second interface level is in the recording of aid offered, accepted, and disbursed. This process requires a constant matching of expected receipts and expenditures (recorded usually in the business office) with anticipations (known to the aid office). The aid office makes offers and receives acceptances, effectively encumbering funds in the official institutional accounts. The business office disburses money to students (according to schedules developed or provided by the aid office), eliminating encumbrances and reducing cash balances. In some programs with single or few disbursals per academic period, the speed with which these two halves of the process can reconcile their records may not be critical; for an institution seeking to avoid underexpenditure of its College Work-Study allocations, a biweekly reconciliation may be mandatory.

It should be noted that federal regulations require a separation of the award authorization and fund disbursement processes within the institution. This requirement mandates that there be some interface between the two offices, although it does not specify the nature of that interface.

A third interface level involves the relationships with off-campus College Work-Study Program job providers. As mentioned earlier, these relationships ordinarily constitute a contract between the institution and the off-campus employer. Both the aid office and the business offices are interested in the proper billing and receipt of the employer's contribution to the salary accounts, in the submission of time cards and progress reports, and in other business functions.

A fourth level, critical to the long-range success of the financial aid operation, pertains to the collection of loans made by the aid office to former students. The actual collection function usually is a business office responsibility. There should be close articulation in exit interviews, establishment of repayment schedules, maintenance of address files, certification of eligibility for deferral or cancellation of principle and interest. There usually is a physical transfer of records at the time a student leaves the institution, but an automatic interface of information in anticipation of that departure can facilitate long-range activities to avoid or reduce delinquency rates.

Payroll and Student Employment

In addition to the off-campus earnings under CWSP, discussed above, institutions must also pay careful attention to their on-campus employment programs. College Work-Study is the only campus-based program now receiving favorable increases in funding, but like all federal programs, it brings its share of responsibilities to the institution. As a result, an automated interface between the financial aid system and the payroll system is often necessary.

In the first place, CWSP earnings need to be monitored continually. Obviously, appropriate action must be taken when students approach their maximum earnings; the payroll interface can facilitate this counseling step by providing early notice that this is about to happen. On a larger level, however, it is important to maintain a firm control over expenditures, encouraging or discouraging CWSP employment, depending on the current rate of expenditures. Any student employment system that relies on a totally manual analysis of payroll data will never be able to provide the timely data needed to make these decisions.

A report of student CWSP earnings eventually becomes a part of the institution's annual FISAP report to the Office of Education. This means that the earnings need to be analyzed and cross-tabulated in several ways, a function most easily performed after such earnings have been posted to the financial aid file, which should contain the necessary demographic variables about the students.

Finally, overawards as a result of student earnings remain a continuing problem for many institutions. Federal regulations limit earnings for students receiving NDSL, CWSP, or SEOG, and the institution can only control inadvertent overawards by matching its payroll file to the financial aid master file. A side benefit of this process may be the "discovery" of graduate students who "forgot" to disclose their teaching assistantships.

Other On-Campus Offices

The admissions, registrar, and business offices represent the three internal interfaces with which most financial aid data processing systems must be concerned. Naturally there will be others. A housing office with an automated system will want to know which students anticipate being on-campus residents and will receive support from the financial aid program in paying their room and board bill. An alumni or development office with an automated campaign may want to know which former students had financial aid and what the needs of certain groups of students might be. A variety of other offices and agencies on the institutional campus may make requests of, or demands on, the aid office data processing system. To the extent that these requirements can be identified in the design phase of system implementation, subsequent relationships can be facilitated.

Off-Campus Offices and Agencies

Systems interfaces with offices and agencies external to the institution could significantly facilitate operation of the aid office. Most state student aid programs are automated and can provide tape exchange of information about new winners, incomplete renewal applications, end-of-year progress reports, award coordination, and so forth. Many commercial lending institutions with high volumes of Guaranteed or Federally Insured Student Loans with a particular institution may provide similar tape-exchange possibilities. The federal government currently allows for machine-to-machine processing or reporting of Basic Grant information and may, in the future, provide it for other programs.

Another important off-campus relationship, mentioned earlier, might be with the College Board and its College Scholarship Service. Both the College Board's Admissions Testing Program and the College Scholarship Service need analysis activities provide output in machine-processable form. Use of their tape outputs, for example, could significantly reduce the data entry costs and activities of the institution that requires all candidates to submit one or the other College Board documents. A variety of research activities are provided at little or no cost to institutions; tape exchange can facilitate that research at even less cost to the institution. The College Scholarship Service is an important supplier of computer software with specific applications that most institutions find less expensive and more efficient than comparable internally developed systems applications. Information about these College Board and College Scholarship Service data processing activities is available through the Board's regional offices.

7. Converting from a Paper Operation

Issues and alternatives have been identified; problems have been resolved; planning has been completed; decisions have been made; and programming has been done. The long-awaited day comes. The director of data processing and the director of financial aid jointly push the button—and the financial aid office comes to a screeching halt. Much is involved in the successful installation of a financial aid data processing system external to the data processing elements of that system. The aid office and the aid staff must carefully and completely review their internal processes and processing in order to convert from their previous paper operation to a computer-assisted one.

Although commonly accepted, the term *conversion* is perhaps not the most expressive that could be used. The conversion concept connotes having the computer do what the aid staff previously had done by hand—only faster. Rather, the aid office should *transform* itself by using the computer technology to better achieve its goals. The aid administrator should view the present process with a jaundiced eye and carry forward into the new system as few "givens" as possible. Many functions and activities of the paper operation may have been expedient simply because it was a paper operation. Implementation of a computer-assisted system may well change many basic assumptions of the processing activity.

Whether conceptualized as conversion or transformation, the planning within the aid office for the data processing system must begin long before there is a completed system with a button to be pushed. Logically, it begins the day the planning effort does, with the financial aid office representatives to the planning team engaging in critical analyses of their activities both to communicate them to their data processing counterparts and to see how and where they can, or must, change. Every element of the system must ultimately be included in those analyses, whether directly related to the new data processing system or not.

People Count

When the new system is implemented, it is likely that the financial aid office will still have the same old staff (modified, of course, by the epidemic attrition common to financial aid offices). The financial aid office staff may be one of the most critical elements in determining the success or failure of both the planning effort and the systems operation.

Implementation of any new system requires change. Change brings with it disruption, disorganization, and unease. People dislike change for a variety of reasons. For some, change requires learning something that they do not want to learn—or are afraid that they cannot learn. Others see change as a criticism of themselves and their work. But most of the dislike of change stems from a lack of information and understanding of what it is; it is the archetypal apprehension in the face of the unknown. The aid administrator and the staff responsible for the planning and implementation activities must take extra care to ensure that their colleagues are kept thoroughly informed about project developments. The active participants in the process must be certain that they do not hide things from their colleagues. That behavior will certainly generate an appropriately high level of paranoia among other staff members.

It is important to have all levels of aid office personnel represented on the planning and implementation teams. Not only does this provide a natural and ongoing channel of communication with the administrative, counseling, secretarial, clerical, and (where possible) student staff of the aid office; but it provides valuable input not available if only "administrators" are included. The clerical staff can provide useful insights into what happens to forms and data and why some things are as they are. The director may have forgotton that some routine process regularly carried out by the clerical staff is an absolute requirement in the completion of a student application. If that process is not represented in the planning materials, the data processing system may find that there are no completed applications to be processed.

As soon as the systems design is completed and programming begins, the aid administrator must retrain staff who will be responsible for the operation of the system in the aid office. In some instances the new process may require skills not present in the current staff—such as operating a keypunch machine. If that is the case, new staff may need to be hired or current staff sent outside the office for formal training activities. When new forms are designed, the aid office staff must be taught how to complete them. When new mechanisms for communicating with students are developed, the aid office staff must be taught how to explain them; many students probably will take the fancy new turnaround document back to the aid office receptionist with whom they have always dealt and ask what to do. As new schedules and turn-

around times are developed, the aid staff must understand that operations now take longer or less time. Where in the past it might have been possible to manually generate a new award notice and payment vouchers in an hour, it may now be the next day before students can actually have aid in their hands.

All levels of the aid office staff must also be involved in the short- and long-term evaluation of the system and identification of modifications that must be made. The clerk in the file room may be the first person to identify a flaw in the system that, if left unchanged, may bring it crashing down around the ears of the director who sits in the office admiring the new toy. Delays and bottlenecks in the work flow not visible in the final outputs of the system could be eliminated, thereby producing an even better and faster system.

There Will Always Be Paper

Implementation of a data processing system for financial aid does not eliminate the paper. It may, in fact, produce more paper for aid administrators and their staffs to handle. It certainly will require and produce different kinds of paper than have been used before.

Early in the planning process the aid administrator should identify to the data processing personnel the information needed as input to and output from the data processing system. The master files will be developed by the data processing personnel to include and accommodate this information. Some may be drawn from the existing computerized records of another office; academic measures, for example, may come directly from the admissions' or registrar's file. But much of it will still be initiated by the aid office. The existing paper operation must be examined in some detail to prepare for the new system. Every form should be reviewed to answer the following questions:

What does it include? Is the information still necessary with the new system? Can the data be derived from another source? Is this form collected and available when the data are needed by the system?

Where does it come from? Who designs the form? Who produces it? When do design specifications need to be completed? When is the form delivered to the aid office? What does it cost?

How many forms are there? Does every applicant or recipient submit one? Should every applicant or recipient submit one? Are there multiple submissions of the same form by the same student? What distinguishes one from another?

What role do the forms play in the aid operations? Are they a critical element? What would happen if they did not exist? What alternatives are there for collecting the data?

Most forms contain many pieces of information. As the automated system is implemented, there may be the opportunity to eliminate the redundant collection of the same information on many forms. There may also be an increase in the incidence of collection of some kinds of information. Identification data, for example, must be more precise when entered into a system that allows for only a match/no match decision, compared with data that existed when a file clerk could spend some time looking through file folders to see if Billy Jones is really William K. Jones, Jr.

Almost certainly the forms completed by students and by the aid office personnel will need to be redesigned. A higher level of precision may be required in the actual forms than was necessary in a manual system. Previously forms could be produced on the financial aid office typewriters and duplicating machines; now they may have to be typeset and printed formally. The aid office may become exposed to the wonderful world of continous-form documents and the special requirements of that technology. Forms design experts may need to be consulted; in fact, the conversion activity may be the perfect time to subject all the aid office forms to the scrutiny of an outside expert, whether required because of system needs or not.

Other elements of the continuing paper operation under the new system are the output documents generated by the system. Output reports are frequently the area of greatest concern to the aid administrator and staff. Lacking assurances of what the mysterious system really will do, there is a tendency to overspecify the output and to demand more than is really needed. Audit trails are important, but in the long run manual verification of every action of the computer produces a less efficient and more cumbersome process than existed before automation. Legitimate data needs certainly must be provided for; compulsive data acquisition must be avoided.

The aid staff must also learn how to read and understand the computer outputs. Information previously available in plain language may now appear in mysterious computer coding. A straightforward elementary education major may now be converted to an 04-037. The Mary Louise Stevenson Memorial Scholarship Fund may now be identified with a beguiling mnemonic. Even familiar dates may be converted to a somewhat unfamiliar MM-DD-YY coding, or even YY-MM-DD. Individuals trained to record the first day of the new year as 01 January may not have trouble with 01-01-80, but what happens on the second day of the year? Changes in the format and presentation of output information will need to be explained to staff. Information that has traditionally been in the upper right-hand corner of a document may now be in the lower left-hand corner. Without explanation (and in the absence of headings) it may as well be missing as far as some staff members are concerned.

Scheduling

The computerized data processing system will undoubtedly perform some activities faster than was possible in the manual system; in fact, speed is one of the primary reasons for automating. But a computerized system will probably result in a slowdown of some other activities. At the very least, it will require more precision in scheduling and more advance planning than may have been necessary in the manual system.

Certainly the development and printing of forms will require more care, attention, and lead time. In a manual operation it is not much trouble to whip up a supplement when it is discovered that a data element has been eliminated from a form or collected incorrectly. In a computerized system it may be equally simple to collect the data, but it may require some time to figure out how to enter it into the system. Printing continuous-form materials is time-consuming, and considerable

lead time must be provided. Careful stock control must be performed to assure that new orders are placed in sufficient time to arrive before existing supplies are exhausted.

Batch processing imposes additional scheduling constraints on the aid office staff. If the batches are processed every Wednesday morning, data has to be ready on Wednesday morning. What is not ready until Wednesday afternoon may have to wait another week to be processed. If the deadline for processing payment authorizations is 9 a.m., it may not be possible to accommodate an authorization received at 9:30 a.m. without considerable effort—and probably considerable expense.

As the planning process proceeds, the aid office staff must develop and maintain careful schedules and calendars. These documents relate both to the planning operation itself (when must the data elements be finally specified) and to the actual operation of the system (what is the turnaround time for changes to the need analysis). The schedules have to be both macro- and microscopic. Thus, it may be sufficient to calendar "revise entering freshman application" for the month of November where it is also necessary to schedule "submit third-quarter tuition remission authorizations" for precisely 4:30 p.m. November 9, 1980.

Where Is That Folder?

One of the greatest fears of the financial aid staff facing a computerized system is loss of control of data. What happens if a student's application is not keypunched when it should be, or if a punched card is dropped behind the file cabinet and the entire FISAP report disappears?

The problems of document control are different only in kind when the paper operation is compared with the computerized flow. It is necessary for the aid office and the data processing staff to collaborate in the development of document control forms and procedures. Batch control sheets, self-checking numbers, control totals, edit reports, and other formal controls may replace the former systems of opening all the file cabinets to be sure they are empty and that all data and transactions have been processed. Because data processing personnel are frequently even more concerned about this element of their operations than are the users, they may suggest or require complicated procedures to ensure near-perfect document control. The aid office staff may find these controls cumbersome and difficult. The effort should be viewed, however, as a mutual attempt to assure quality processing.

The most difficult part of the transition to automation is that the financial aid office must accept the battle for control as ongoing. Information will get lost; documents will be miscoded and miskeyed; files will be misplaced. Procedures depend on people for their effective implementation. The management challenge is in providing good supervision to overcome the anonymity of computerized volume.

Another area of data control concern relates to the security of information collected in and through the financial aid process. The kinds of data needed to document eligibility for financial aid are as private and sensitive as that collected in the health center. Care must be exercised to assure that only those with legitimate and approved need-to-know have access to it. Data security procedures need to be an early part of the planning process. Procedures also must be established to specify who may change data in the system and under what conditions. This is a specific concern in an on-line, interactive system where the traditional paper audit trail disappears. Specific responsibilities for the maintenance of data should be part of the planning document used to develop or implement the system.

The Best-Laid Plans

There will come a day. The planning process completed, programming done, forms revised, schedules implemented; one day someone will press the start button. What happens if nothing happens?

Certainly something will happen. More than likely it will be exactly what was expected. But if the system does not function completely and correctly, the aid administrator will have to implement backup procedures. Students will still need to be served. Something will have to be done while the system is fixed. If the aid administrator waits for system problems to occur before planning for that eventuality, the entire system may stop.

One alternative is to run the old manual system in tandem with the new system for some period of time. This may double the work, but it usually ensures the continuous and correct processing of student applications. It also provides a valuable check on the accuracy of the computer system processing. Theoretically the two parallel systems will produce exactly the same results. When differences are identified, their sources can be traced. In some instances there may have been incomplete or incorrect communication between the aid office and the data processing office as to requirements. An "and" relationship may have been communicated as an "or" relationship. Data may have been coded incorrectly. Logic of packaging parameters may have been altered. Or it may be discovered that the manual operation really did not work the way the aid administrator thought it did—a not infrequent finding.

Another alternative is to phase in the computerized system for student groups during a period when time may not be a critical factor. Processing of renewal cases, for example, could be started a month or two earlier than necessary in order to provide time to double-check results and correct any errors. A plan to complete the FISAP report three weeks before it is due can provide three weeks in which to correct problems or to revert to a manual system if necessary.

Throughout the planning and implementation process the aid administrator must be a pessimist about time lines. It is safe to assume that it will always take longer than anticipated. It is a mistake to tie plans for the financial aid office to an implementation schedule that is unrealistic. Sufficient time must be allowed for testing, debugging, simulation, and conversion. The automated system must be fully tested before the manual operation is totally abandoned. And even then there must be standby provisions for unexpected difficulties.

Ultimately, disaster plans must be developed. These are involved plans to cope with such prosaic occurrences as power failures and machine malfunctions during registration. They also involve such important matters as storage of duplicate sys-

tems tapes in secure locations to prevent accidental destruction. The aid office and the data processing center must continue their active collaboration through implementation and operation of the system to assure that the best-laid plans of mice and men do not, in fact, go awry.

Implementation

The process of implementing the system, once designed, can be summarized in the following steps:

I. Implement the system in a test mode.
   A. Test the system itself.
      1. Generate test data for individual steps and overall system. Do results conform to the results that would be (were) obtained in the manual system?
      2. Simulate entry of new cases into the system. Can the input forms be completed? Do the interfaces work? Are all the data needed for processing enterable through the system? Do the input flows need modification? Are the instructions and documentation clear?
      3. Review outputs. Are they correct? Do they cross-foot? Can they be understood? Do they meet the needs of the office? Of other offices at the institution? Of off-campus agencies and offices? Is the documentation complete and correct?
   B. Train personnel.
      1. Provide a general overview of the system to all personnel directly or indirectly involved in the system to assure general understanding of function, process, schedule.
      2. Provide specific training to operating personnel. Is at least one person familiar with every operation required by the system? Are there backups? Do the real flows of work correspond with the planned flows?
   C. Evaluate system test. Can schedules be maintained? Are quality controls adequate? Are all functions discharged as planned? Have all necessary resources been committed and/or obtained? Is the system ready to go on line in an operational environment?

II. Operate system in parallel with prior procedures. Could you recover if system fails to operate as expected? Has every possible element of the system been tested and used operationally? Are all contingencies covered?

III. Begin full independent operations.

IV. Review and evaluate operations.
   A. Within the aid office.
      1. Have the outputs proved adequate? After one or two full cycles of independent operation, have all operating and reporting needs been met? What improvements do staff suggest? What new requirements or needs have arisen? Have they been met?
      2. Have the procedures been followed? Are things operating as was expected or have staff patched them to make them work? Do the flows happen as expected? Are quality controls operating? Are they adequate?
      3. Have the students been served adequately? Better than before? As well as they could be?
   B. In other institutional offices.
      1. Do the input and output interfaces work? Do data flow to and from other institutional offices smoothly? Has the work load in other offices serving yours been reduced? Do other office personnel feel good about your new system?
      2. Has the system met the data needs of other offices? Do they understand what your system gives them? Do they use it? In the ways you expected? Could they use other things from the system?
   C. Outside the institution. Do reports go out on time? Are they correct? Do outside administrators view the system as efficient? Can they get what they need from it?
   D. What may the future hold? What changes in programs might arise from change in the institution? From changes outside the institution? Could the syste.n accommodate those changes? What improvements in the use of outside data sources could be made? Are there new kinds of equipment or new processes that might be implemented to further improve the system? Are you on the cutting edge? Should you be?

V. Talk it up. Share your experiences with colleagues. Offer to share your system. Make presentations at professional meetings. Submit papers to the College and University Machine Records Conference. Make a description of the system available through CAUSE. Become an expert. Get all of the mileage you can out of the work you went through to develop and implement the system.

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This publication is not intended to be an exhaustive or a thorough introduction to data processing, to financial aid, or to data processing for financial aid. For in-depth information in any of those areas, institutional administrators will have to turn elsewhere. The best sources of information, of course, are colleagues who have successfully undergone the transition from a manual to an automated operation. But for those who want further readings, the following references are provided:

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